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THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS*

BY

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This is a subject which some of us have used for lectures to undergraduates and discussions with our colleagues for many years. As personal experience has grown the difficulties of the problem have become exemplified and tendencies to dogmatic statement curtailed. As in other troublesome problems of medicine, the brunt of it falls on the general practitioner; and in this he has our lively sympathy and our willing co-operation. When the patient comes to the specialist it is usually because there has been some conclusive symptom or because an examination of the sputum or an *x*-ray photograph of the chest has established the diagnosis. If then the relatives ask the consultant to support their indignant criticism of the practitioner for failing to diagnose the condition at an earlier date, he may well point out to them how complete the absence of all evidence of the disease might have been a few months or even a few weeks previously. Well-informed laymen may complain that a practitioner when consulted in a case of suspected tuberculosis did no more than make a physical examination of the patient, and took no steps to obtain bacteriological examinations of the sputum, a record of the temperature range, and a skiagram of the chest. If it were true that a suspect of tuberculosis had been acquitted on such slender grounds their criticism would be well founded, and an action for negligence might be difficult to defend. In years gone by I have heard physicians state that they could diagnose pulmonary tuberculosis in its earliest stages by physical examination of the chest. At the time I received the statement with scepticism, and now I know that it deserved flat disbelief. No special skill of eye or ear or hand will enable any individual to detect the earliest lesions of tuberculous disease in the lungs or warrant him in excluding the disease without further investigation and a period of observation. In a few exceptional cases I have found physical signs of the disease before any other positive evidence was obtainable, but in reviewing any large number of cases one is forced to the conclusion that in early diagnosis the method of physical examination alone would be completely unreliable; it is a broken reed.

have been speaking of *physical* examination, and the same strictures would not so completely condemn a proper *clinical* examination, which would include a careful inquiry into family, contact, and personal history, and a painstaking elicitation of symptoms. This should bring a much better catch into the net.

Early Symptoms

Most of the symptoms in the earlier stages of the disease are those of toxaemia, and many of them are not specific. They are fatigue, loss of morning appetite, loss of weight, and psychological disturbances which are often described as neurasthenia or as a nervous breakdown. In young women another common toxaemic symptom is amenorrhoea. This symptom in a young girl may arise from a variety of causes; two causes which must always be considered are tuberculosis and pregnancy. The more specific symptoms are cough, expectoration, night sweats, and haemoptysis. Any one of these symptoms in an adolescent or a young adult should arouse suspicion, and several of them in combination would go far towards clinching the diagnosis. There is one symptom which in the absence of all other evidence is in itself diagnostic, and that is, a free haemoptysis "out of the blue." By this is meant a copious haemorrhage, a cupful or more of bright liquid blood welling up into the mouth in a young subject who has no other symptom or sign of disease. Is there any cause for such an occurrence other than an acute tuberculous lesion of the lung? If there be some other cause in an apparently healthy person I have not met with it. In such a case, announce the diagnosis and order your patient to bed for two months on the spot. Do not wait to investigate, for such haemorrhages often occur at such an early stage that all investigations prove negative. In the meantime you may lose control of the treatment, and the patient may not come back to you until months later, when the disease has become firmly established and perhaps incurable.

Early Complications

We are sometimes enabled to diagnose the disease at an early stage because of the occurrence of complications that are apt to develop before the focus in the lungs has attained a size which renders it liable to detection. The more common of these complications is a sterile pleural effusion, and it is not necessary for me to insist that such an effusion, in the absence of evidence of malignant disease, is diagnostic. The less common and less universally recognized of these early complications is perianal fistula. This lesion is so frequently followed by manifest tuberculosis of the lungs that I believe its diagnostic significance is little less than that of the pleural effusion.

Investigations

Many cases are submitted to us in which the diagnosis cannot be established by the history, symptoms, signs, or complications; but we dare not in any case give a negative diagnosis without investigation. What are the methods of investigation we should employ?

First in importance comes examination of the sputum, if there be any. If there be none, then the patient should

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be given potassium iodide or ammonium carbonate in 10-grain doses until expectoration is provoked. The sample so obtained may be poor thin stuff, devoid of pus; and the pathologist may regard it with contempt and doubt whether it be worth the trouble of staining. Give him courteous encouragement, for tubercle bacilli have been found in many such unpromising specimens. One negative result is of no significance, but indicates the need for two further samples to be submitted. In many cases three negative results must be regarded as inconclusive, and then recourse is had to a more searching test than that of microscopical inspection of a stained smear. Until recently the test favoured has been injection into a guinea-pig, followed six weeks later by killing and necropsy of the animal for evidence of tuberculous inflammation of the lymph glands draining the site of injection. Objections to this method are the long period involved before the test can be completed, and the proneness of captive guinea-pigs to sudden and premature demise, which may remove them from the scene before the test is complete, but when several weeks have been wasted in fruitless waiting. The guinea-pig is therefore being supplanted by cultivation of the sputum for tubercle bacilli on special media such as that of Loewenstein. If bacilli are present, colonies usually develop within fourteen days; and the proportion of positive results is little if at all inferior to that obtained by animal inoculation.

After examination of the sputum for tubercle bacilli the investigation next in importance is the taking of an *x*-ray photograph of the chest. The improved definition obtained in recent years by exposures of a fraction of a second has greatly increased the diagnostic value of radiography of the lungs. It is unnecessary for me to deal with the details of this subject, but I should like to reiterate that the value of the method must depend ultimately on the knowledge and experience of the man who interprets the appearances seen on the screen and film. The wise physician will view and discuss these appearances with the radiologist; the wise radiologist will leave the responsibility of diagnosis to the physician.

The third form of investigation which we commonly employ is a diurnal record of the temperature. Satisfactory readings can be obtained with a calibrated "half-minute" thermometer kept in the closed mouth for three minutes. In a case of early tuberculosis, when the patient is up and about, we shall generally find an abnormal range, the morning readings being unusually low and the evening readings above 98.4° F. It must be remembered that in young women the temperature commonly rises to 99° or over during the week preceding the menstrual flow, even in perfect health.

These three methods of investigation—examination of the sputum, radiography of the chest, and recording of the temperature—are a necessary part of our technique in diagnosing pulmonary tuberculosis in its early stages; but there are other investigations which some of you will have in mind. First there are the various tuberculin tests—cutaneous, subcutaneous, or conjunctival. These tests are still held in great respect by our veterinary colleagues and by those of our legislators who supervise the production of the milk supply. The result of a tuberculin test decides the question of life or death in the herd of an attested dairy farm. It is fortunate that the human species is not subject to the same dubious regulation; for it would involve the slaughter of some 80 per cent. of the adult population of these islands. There is overwhelming evidence that a positive tuberculin test indicates sensitivity to tuberculin, and that it signifies that the individual has probably at some previous period been infected by and acquired some immunity to tubercle bacilli; but it is no evidence at all that the individual is suffering from tuberculous disease, except in the case of infants.

Another type of investigation depends on examination of the blood. Many attempts have been made to devise a satisfactory complement-fixation test, but up to date none have gained a reputation for reliability. On the other hand the erythrocyte sedimentation rate, the Arneth–Von Bonsdorff nuclear count, and the lymphocyte–monocyte ratio have been found of real value in assessing the progress and severity of tuberculous disease. Most of us must, however, agree with Professor Lyle Cummins (1933) when he says that they are of little value in diagnosis.

In our routine diagnostic investigations we are therefore reduced to the three which I mentioned first: sputum test, *x*-ray photograph, and temperature record. Of these the sputum test, when positive, is the most conclusive. I have seen a few cases in which tubercle bacilli were demonstrated in the sputum many weeks before expert and repeated radiographic examinations were able to demonstrate any lesion in the lungs. Such cases, however, are exceptional; moreover, in many early cases no sputum is obtainable. In the early case not only may there be no sputum; there may be no symptoms of any kind. This leads me to the final point of my contribution to this discussion. Early diagnosis is impossible if the victim does not come under medical observation at the appropriate time. Not long ago I saw a young man who was working hard for an Honours degree at one of our older universities. He had had cough, expectoration, and night sweats for twelve months before he consulted a medical man. He was then found to have tuberculous cavitation of both lungs. In that case the patient and his friends were deserving of blame.

The public is being educated with regard to symptoms which should cause them to seek expert advice; but that is not sufficient, for there are cases in which the disease may be detected before the individual has any warning of an impending disturbance of health. We have learned this from the careful investigation of apparently healthy contacts living in the same house with a sufferer from open tuberculosis. The lesson is driven home by investigations such as those of R. C. Wingfield and Margaret Macpherson (1936). They took *x*-ray photographs of the chest in 2,381 adolescents employed in factories and shops. The material consisted of apparently healthy subjects between the ages of 14 and 21. By this method they discovered that about one in every hundred had tuberculous lesions in the lungs. Similar investigations in other countries have resulted in the finding of latent pulmonary tuberculosis in from 1.5 to 3.9 per cent. of supposedly healthy adolescents. Some of our larger hospitals are now carrying out a similar radiographic examination of their nurses and medical students. At each such institution unsuspected cases of active tuberculosis have in this way been detected. The day may come when it will be possible to take an annual *x*-ray photograph of the chest of every young person from the ages 14 to 24, and a big step will have been taken towards the early diagnosis and the eradication of pulmonary tuberculosis. In the meantime let us press for the application of this system where it is most needed—amongst the nurses and students at our hospitals, the students at our universities, and the factories which employ the young girls of whom this disease takes so large a toll.

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TREATMENT OF ACQUIRED DEFECTS OF THE SKULL

BY

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If one may judge by the paucity of literature on the subject, the treatment of defects in the vault of the skull does not seem to have been of interest to British surgeons. A search through the *Index Medicus* has resulted in finding references to only two papers, both of which appeared in the *British Journal of Surgery* (vols. 3 and 4). Yet these holes in the skull may be associated with symptoms of much concern to the patient, arising from brain complications—the result of the injury. In their slighter forms they show as headaches, giddiness, mental depression, inability to concentrate, and want of confidence, any or all of these being no doubt influenced by the constantly obvious hole through which the pulsating brain can in many instances be observed, while some of the patients who before their injury never had any trace of nervous disease may become subject to epileptiform seizures.

Operation for the repair of these defects affords an opportunity whereby the patient may be really greatly benefited, so that these injuries offer an interesting field in surgery. Too many patients suffered from war wounds that terminated in this way, and it is remarkable that so few reports of operation for the condition have been published and that none can be found recording the late results of any operative treatment.

In civilian practice open fractures of the skull are probably the most frequent cause; very much more rarely a hole is left after a portion of a bone, the seat of a neoplasm, has been removed. In early life contusion of skull bones with or without a fracture may in rare instances be followed by more or less extensive absorption of bone, and it occasionally leads to the development of a "traumatic cephalhydrocele" (*Edin. Hosp. Reports*, **3**, 562).

When dealing with closed fractures of the skull that require operation it is probably the custom of most surgeons to replace any bone that is removed—for example, trephine disks, loose fragments in depressed fractures, etc.—as suggested and practised by Sir William Macewen. In the majority of cases the reimplanted bone forms osseous union frequently only by interrupted bridges, but strong enough to give good protection to the brain; but it is unusual for reimplantation of bones to be followed by fibrous union.

With open fractures it is often a matter of greater difficulty. Many of the patients who sustain these injuries in civilian life have the entire wound thoroughly ingrained with extraneous dirt: not only the surface of the scalp wound but the bone surface and even the brain itself may be thus contaminated, as well as by sebaceous material, hairs, etc., from an unclean scalp. Cases of this type offer as good a test of one's ability to make a wound aseptic as can be found in the whole field of surgery, but when thoroughly dealt with it is surprising how well they get on and how often healing by primary union takes place. In these cases it is the experience of the operator which counts: that alone will allow him to decide whether the bone may be reimplanted or not, though the most experienced will occasionally find that there has been a failure to prevent sepsis and that the bone fragments must be removed. It must also be remembered that in many cases fractures of the vault are continued down to the base and involve the accessory sinuses connected with the nasal cavities, from which infection can spread.

Of 115 cases of fracture of the skull under my care that required operation bone was removed temporarily and reimplanted in forty-seven. Sixteen of these had closed and thirty-one had open fractures. Of the sixteen with closed fractures three died—two from laceration, etc., of the brain, and one from septicaemia following a suppurating parotitis which developed seventeen days after operation. The others made good recovery.

Of the thirty-one patients with open fractures, many of whom had wounds thoroughly ingrained with extraneous dirt, six died of cerebral complications within forty-eight hours. The others of this group recovered; in four of them, however, the reimplanted bones had to be removed, three of these because of sepsis; in the fourth patient, who had a deep gutter fracture of frontal bone, a trephine disk was required to enable bone to be elevated: the two tables of these fragments were completely separated along the diploe. Neither the frontal (air) sinus nor the longitudinal (venous) sinus had been injured. The trephine disk and the outer table of the fragments were reimplanted; and while the latter united well the disk remained movable. Nine months later the patient returned complaining of pain in the skin of the forehead on pressure over the site of fracture; this was due to a spicule of bone. An incision was made and the trephine disk found to be quite avascular and loose. The reimplanted fragments of the outer table were firmly united and fixed; and the dura mater in the trephine opening had a good layer of new bone covering it in continuity with the margin of the opening.

In the case of gunshot wounds of the skull, and particularly in those sustained in the war, sepsis of a severe degree occurred in all of them, resulting in a prolonged convalescence; and all wounds of this type that healed did so with more or less extensive adhesions between brain and scalp. In many instances no real scalp existed at the wound, the cerebral cicatrix being covered merely by a thin layer of epithelium, intimately adherent to it, and of course immobile upon the brain below.

It is not good that a man should have his brain anchored to his scalp, and perhaps this is more important in wounds at the Rolandic and frontal areas. These are the cases associated particularly with cerebral symptoms, which may be another reason for operative treatment in addition to that of filling up the opening in the skull.

There are various methods by which these openings may be closed. They are either autoplastic or heteroplastic. Of the autoplastic methods the König-Müller operation does not appear to have been adopted in this country to any extent. It has never appealed to me, and I have never seen any patient who had been treated by it.

In some situations where there is a large gap to be filled in it may be impossible to cut an intact bone-flap, and in most cases, owing to the convexity of the skull, the best that can be done is to produce a tessellated layer of bone scales. The method is not adapted for cosmetic purposes on the forehead. The extent of wound produced by the formation of the two flaps required is no great advantage. The use of bone, or cartilage, transplanted from a distance has its advocates. It means an additional wound, and a rough, irregular, freshly cut surface in the case of bone that might lead to the development of irregular spicules, causing irritation either of the brain or of the scalp (see above).

The ideal operation, in my opinion, is the one that gets a patient well as quickly and as easily and with as little traumatism as possible, and so in every instance of a gap in the skull, both in civil and in military practice, I have employed celluloid for the purpose of filling the gap.

Celluloid has one, and only one, disadvantage—it is a foreign substance. The qualities which recommend it are many. In the first place, unlike almost all the heteroplastic materials that have been employed from time to time, it is not absorbable; then it is easily obtained in plates large enough to fill any of these openings, is easily worked, and can be moulded within certain limits. It can be "splinted" for extra strength or to maintain a definite and desired shape with a second layer, or by strips, of the same material, which, with a proper solvent, become permanently incorporated as a single mass; it is easily sterilizable; it presents an entirely smooth surface to a damaged cortex beneath and a freshened surface of scalp or scar tissue above it, the advantage of this being that the outside covering remains freely mobile upon the plate. Celluloid is, moreover, strong and resilient and capable of resisting quite a considerable degree of violence (see below). As far as I am concerned my experience in its use is entirely satisfactory, and, what is more, the patients I have seen recently, twenty and more years after their operation, are thoroughly satisfied also.

In the *British Medical Journal* of February 3, 1906, I reported notes of six patients for whom celluloid was employed for gaps of various sizes, the largest being 9 × 5 cm. Since that date I have only used celluloid for five other patients in civilian practice.

After the war began in 1914 eighteen men were admitted under my care at the 4th Scottish General Hospital suffering from gunshot wounds of the skull and brain. Two of these men came with large granulating cerebral herniae, the others with their wounds completely cicatrized, leaving more or less dense and extensive adhesions between brain and scalp.

Concerning these eighteen men, all of whom had a celluloid plate inserted, eight have been lost sight of (five of them were the subjects of general epilepsy—the result of the brain injury—the fits coming without warning); and it is unfortunate that the later history of these patients is lost. The remaining ten I have seen personally during this current year, twenty or twenty-one years after their operation. Six of these were suffering from traumatic epilepsy following on their injury when they came under observation. Three of them have not been improved so far as the epilepsy is concerned, the fits continue and they have been unable to work since their discharge from hospital. In one of these patients the wound was frontal, in one parietal, and in one right parieto-occipital with visual aura (flashes of light) preceding the convulsions. The fourth patient (with left occipital wound) of this group had many generalized fits with visual aura (flashes of light, "revolving like a wheel"). He has been free from any major seizure since his operation and has been employed continuously since his discharge: but states that at times he still sees the flashing light, which is followed by a "queer feeling" coming over him (*petit mal*). When this happens he is obliged to cease work for about five minutes, but does not lose consciousness. At the end of this time he goes back to a moulding machine in an engineering shop, and is able to take up his work where it was left off. He is employed on full wages, so these interruptions cannot be very serious.

Of two remaining patients, one, with a frontal wound, had many general convulsions before and several during the early days following his operation; the other, with a wound over the left Rolandic area, was the subject of Jacksonian epilepsy, the fits beginning in the right index finger and usually involving both limbs of the right side. These two patients have been entirely free from fits since they were discharged from hospital; they are employed full time on full wages in responsible positions, sums of money passing through their hands.

Four men happily escaped the calamity of having epileptic manifestations added to the misfortune of being wounded. Three of them have been well in every way since their discharge from hospital and have been employed full time on full wages ever since. One (frontal) works in a large explosives factory; one (parietal) is a railway platelayer; one (frontal with a large part of the vertical right frontal bone and the whole of its horizontal plate removed) is in charge of a pumping engine at the waterworks of a large town. The fourth man of this group went seven years without any fits after his skull was plated, but at the end of that period developed an abscess, and seems to have had one or two fits. The abscess was evacuated, and the plate, a large one, was removed; the wound healed again quickly. Two years after this event he called upon me and said that he was very well and had had no more fits, but was not working. He produced the plate, which was absolutely intact after its seven years in his head and did not show the least sign of erosion at any point. A letter received from him in the spring of this year stated that he was well but still unemployed.

In these ten men the "plates" were found to be sound, fitting well, and of good resistance, and with the cutaneous scars freely movable upon them. All the men expressed satisfaction with the plates and said they had a feeling of confidence in themselves in consequence of having them.

The technique adopted in all these cases has been the same as described in my first paper. For an operation in which a heteroplastic substance is to be used the essential factor is to obtain asepsis. One may say that where sepsis has occurred after the primary wound, and especially where healing has been by extensive epithelialization of granulations, the longer a patient can be kept between the time of the last granulation being covered and the secondary operation the better. All the war cases dealt with had been highly septic, and the plating operation was always deferred till at least six weeks after complete covering had been obtained: better still to wait two, or even three months, although while the war was in progress it was not easy to keep the patients so long in hospital. These remarks apply equally to the use of completely detached bone or of cartilage. It is possible that infection can be better resisted by the bone scales obtained in the König-Müller flap, for they are still in vascular continuity with the soft tissues of the flap.

As has been stated, the cicatrix of the scalp was very often of the thinnest description, and the effort was always made to keep this intact by incising through the normal scalp and dissecting the superficial scar as carefully as possible off the cerebral scar. In spite of this thinness and the apparently poor blood supply, necrosis of the scar did not occur in any case. The brain scar, often very dense and at other times cystic, was excised, and a layer of thin celluloid (actually a portion of a photographic cartilage-film), large enough to extend completely beyond the cut surface of the brain, was employed by slipping

it below the opening in the dura mater, all round, and then filling the bone defect with celluloid, one-sixteenth of an inch thick, laid upon a shelf made by chiselling completely round the bone margin. The layer of thin celluloid was used with the idea of having a perfectly smooth surface which might exert a slight pressure upon the brain wound and prevent broad and extensive adhesions from forming between it and the dura mater; I believe that it was definitely useful. The scalp incision was always close-sutured with deep and superficial stitches and without drainage. In several of the patients fluid—blood, serum, or cerebrospinal fluid—collected beneath the flap, at times causing considerable tension; this fluid was removed by aspiration through the substance of the flap, repeated as often as necessary until the flap came to lie permanently on the surface of the plate. I am of the opinion that the removal of fluid from the cavity of an aseptic surgical wound through the cut edges of the wound is a surgical error, for it constantly leads to sepsis. The fluid should be aspirated through the otherwise intact skin.

The chief purpose of these notes is to indicate that celluloid is a thoroughly satisfactory material for the object in hand, provided that asepsis can be maintained.

Its durability is proved by the fact that in nine patients examined this current year the plates which were inserted in 1916–17 are to all intents as good as on the day of operation and are all fitting accurately.

Of the six patients reported in 1906 the after-history of only two of them is known. One of these, a man with a large plate in his right temporal fossa, lived for thirty years, and died, from senile gangrene, with the plate *in situ*. The other, a female, was the first patient for whom I used celluloid. This was in 1897, to fill a gap that had been produced by the removal of a tumour of the left frontal bone, the diagnosis of which lay between sarcoma and gumma, and which had not reacted to a course of anti-specific treatment of those days, being still the cause of intense pain. It was removed ten years before Wassermann's test or Ehrlich's treatment had been elaborated, but when the test was ultimately made and a positive reaction obtained the treatment was given with an entirely satisfactory result. This patient is still alive and well with the plate *in situ*, just forty years after it was inserted. At that time it had been moulded into a dome shape that corresponded fairly accurately with the natural convexity of the left frontal bone. Several years later the patient received a severe blow upon the plate, with the result that it was considerably flattened, but it possibly saved a brain contusion.

As further evidence of the resisting power of celluloid, another patient, also with a frontal plate, while working as a gardener was struck with the flat surface of a spade sufficiently heavily to produce a scalp wound over his plate, but without further injury. And one of the epileptic patients with a frontal plate who was recently seen volunteered the statement that during his fits he had often had his forehead bruised, and felt sure the plate had given definite protection. These facts regarding its resistance to external violence and its durability indicate that celluloid is an excellent substitute for transplanted bone, which is only superior to it in that it can become an integral part of the skull.

The total number of men doctors in Germany has risen from 52,342 in 1935 to 55,259, or 5.6 per cent. The number of women doctors during the same period has risen from 3,644 to 4,339, or 19.1 per cent.

SOME UNUSUAL CASES OF GLAUCOMA SECONDARY TO INJURY*

BY

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The occurrence of glaucoma as a complication of ocular injuries, both non-perforating and perforating, is familiar to all of us, and I think I may say that in most cases a satisfactory explanation for its development can be given. The cases which I am about to describe, however, seem to me to be worthy of report, because not only do they not belong to any of the commoner types, but I am not aware that similar cases are to be found in the ophthalmological literature. Unfortunately the mechanical explanation of the rise of tension in each of these is, so far as I am concerned, so obscure that I am unable even to make any reasonable suggestions, but I can at least inform you fully as to how three of the four cases reacted to treatment.

Case I

My first case is one in which the glaucoma was the result of a non-perforating injury. A man, 21 years of age, when playing Association football received a blow on his left eye—he thinks that the loose end of the lace of the football struck him. The eye was very painful at the time, but the pain disappeared in the course of a day or two, and the sight seemed to be unaffected. Some time after the accident—he cannot say definitely when—he had a sudden attack of misty vision, associated with neuralgic pain and haloes. Similar attacks occurred at intervals, especially in the evening, and these became gradually more frequent and severe. I first saw him two months after the accident—he was then having a particularly severe and prolonged attack, the eye having been painful and the sight misty for two days. The left cornea was slightly hazy, the pupil semi-dilated and sluggish; the tension was raised and arterial pulsation in the retinal arteries was present; there was no cupping of the disk; the vision with a −1D sphere was 6/9 partly. After instillation of 1 per cent. eserine the tension became normal in half an hour. Apart from the increased tension no abnormality of any kind could be found; the anterior chamber was of normal depth and the lens in place and undamaged. After the fall of tension to normal, vision was 6/5 with a +1D sphere. The field of vision was full. The patient was delighted with the effect of the eserine, and I prescribed 1/4 per cent. eserine drops twice daily. This kept the tension normal for a time, but if the eserine drops were left off the attacks began again. The patient came to see me several times just as one was beginning, and on each occasion the eye became temporarily myopic just before and during the attack. After about two months, as the attacks recurred directly the eserine was discontinued, I decided to operate; several of my colleagues saw the patient, and agreed that this was the right thing to do. As the only abnormality discoverable was a suggestion of increased flare in the aqueous, I thought it best to begin with a paracentesis. The result of this procedure was that the attacks ceased for a fortnight, but after that they recurred again as badly as ever. I then trephined the eye. Two days afterwards, when I was dressing the eye, the patient closed the other one and said that everything looked distorted. On examining the fundus I saw an enormous papilloedema, of about 6 dioptres measurement, and numerous large retinal haemorrhages surrounding the disk. The papilloedema subsided in about three weeks, the haemorrhages ultimately disappeared, and two months after the operation central vision was 6/4 unaided. The visual field, however, showed a general peripheral constriction, especially marked on the temporal side. The constriction of field was accounted for by a reduction in size of the peripheral retinal arteries,

* Read in the Section of Ophthalmology at the Annual Meeting of the British Medical Association, Belfast, 1937.

which had a thread-like appearance. This state of affairs has now persisted for over ten years. No further attacks of raised tension have occurred in spite of the fact that the trephine hole became closed in the course of a few months. At the present time the eye looks exactly the same as the other—there is no cupping of the disk, and apart from the field constriction, which is greatest on the temporal side, and the thinning of the retinal arteries peripherally, there is no visible abnormality. The central vision remains 6/4 unaided, neither hypermetropia nor myopia being present.

Quite recently I saw another case, similar in some ways to the one just described.

Case II

The patient is a man, 30 years of age, who gives a history of a blow on the eye twenty-two years ago. Central vision has never been good since the accident. Eight years ago he began to have occasional attacks of haloes and pain, these being first noticed when diving. The attacks subsequently occurred more frequently. When I first saw the patient the disk was deeply cupped, and an area of pigmentation due to commotio retinae was present below the macula, the latter appearance probably accounting for the diminution of vision immediately following the accident. A large iridodialysis was also present in the lower segment—this, too, had been caused by the accident. Nothing else abnormal was seen: the lens was in place and the anterior chamber of normal depth. The iridodialysis being a large one, a considerable part of the iris root was completely separated from its attachment, leaving that part of the filtration angle widely open. The cupping of the disk was definitely glaucomatous, and the patient had recently become aware that the nasal part of his visual field was deteriorating. In this case no symptoms of glaucoma appear to have set in until fourteen years had elapsed since the accident. No treatment has as yet been undertaken.

Case III

The other two cases which I am about to describe are of glaucoma arising from a perforating injury—to be more exact, from the retention of an intra-ocular foreign body. The first case is that of an engineer aged 50 who consulted me because of failure of vision in the right eye, which he had observed over a period of seven months. He had seen two oculists in America, both of whom had diagnosed glaucoma and had advised operation, but neither had suggested a cause for the condition. When I first saw him the left eye was normal, except for a small myopic error. The tension of the right eye was definitely raised, and the optic disk showed early cupping. In addition a hole about 2 mm. in diameter was visible in the iris on the nasal side, and through this hole a red fundus reflex could be obtained. Immediately in front of the hole a minute scar from an old perforating injury could be seen in the cornea. In the vitreous a considerable amount of fine floating opacity was visible. The pupil was small and only just reacted to light: on instilling homatropine partial dilatation resulted and a small localized lens opacity was observed just below the iris hole. Otherwise the effect of the mydriatic was to cause further rise of tension, which again fell to its original level, but not to normal, on contraction of the pupil with eserine. The anterior chamber was of normal depth. The visual acuity was 6/9 partly. An *x*-ray picture of the right orbital region revealed the presence of an intra-ocular foreign body 8 mm. below the horizontal line, 1 mm. to the nasal side of the vertical line and 7.5 mm. deep to a plane tangential to the surface of the cornea. On putting the eye up to the Haab magnet the foreign body gave evidence of being magnetic. It was impossible to remove this by the anterior route, but by repeated daily applications of the magnet it was gradually pulled forwards until it lay immediately under the sclerotic. After each application of the magnet the change in position was verified by an *x*-ray picture. Finally I made a meridional incision in the sclerotic over the site of the foreign body, which was successfully extracted with the magnet, and which proved to be a small chip of steel. On its removal the tension fell to normal, and was still normal two months after the operation, when I last saw the patient. On this occasion I instilled homatropine to note its effect. The pupil again dilated partially, but the intra-ocular tension was not affected. The visual acuity was now 6/6, and I attribute the improvement in vision to the fact that the vitreous had become much clearer. One curious point about the case is the complete absence of siderosis, and in this connexion it has been suggested that a foreign body composed of one of the modern non-rusting varieties of steel might not give rise to siderosis if retained intra-ocularly. The patient himself was quite unaware that a chip of metal had entered his eye, and could not remember that any accident had occurred. He is a designing engineer and does no manual work himself, but is frequently in the neighbourhood of workmen who are engaged in hammering metals of various kinds.

Case IV

My last case is similar in essential points to the one just described. The patient, a chauffeur, came to Moorfields complaining of attacks of pain and misty vision in the left eye. He thought that a piece of china had gone into the eye about seven months before, since when the sight had gradually failed. On examination the right eye was normal, but the left showed a hazy cornea, raised tension, and a cupped disk, the anterior chamber being of normal depth. A hole was present in the iris on the nasal side, and a small corneal perforating scar could be seen opposite to the hole, as well as a localized lens opacity. The pupil was slightly dilated and did not react at all. *X*-ray examination revealed the presence of an intra-ocular foreign body in the vitreous, which, however, gave no response to repeated applications of the magnet. The disk was deeply cupped and pale, and vision was reduced to counting fingers at a metre. In this case I performed a trephining operation, which successfully reduced the tension to a normal level.

Commentary

I cannot offer an explanation of the rise of tension in any of these cases. In the first case the occurrence of papilloedema and retinal haemorrhage, with ultimate peripheral arterial constriction, may perhaps suggest that the fundamental disturbance was a vascular one. An alteration in the drainage channels of the eye seems to me to be unlikely in view of the persistence of normal tension in spite of the closure of the trephine fistula. In the second case, too, an interference with drainage seems improbable, especially bearing in mind the wide iridodialysis below. Again, in the third case the circulatory mechanism of the intra-ocular fluid appeared to function satisfactorily after the foreign body had been removed. No permanent leakage could possibly have taken place through the small scleral wound. In the fourth case the glaucoma was relieved by a trephining operation.

The Swedish State Bacteriological Institute has recently moved into new premises at Huvudsta, a suburb of Stockholm. The new institute forms a town in itself, comprising three laboratory buildings and five pavilions for the animals necessary for the work. With all requisite laboratories and chemical, photographic, and optical departments, library, etc., it presents several new and interesting features. In the main building, three stories high, a giant refrigerator stretches from the ground floor upwards through all the floors, and constitutes a storing place for the various sera and vaccines produced at the institute. Each floor has a separate refrigerating room for the preparations dealt with in the different departments. In one department, where sterilization work is carried on, special air-conditioning by means of water and wadding floors has been arranged to guard the work against infection.

BENZEDRINE IN SEA-SICKNESS

BY

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The introduction of benzedrine (beta-phenylisopropylamine) sulphate, with a powerful action more or less sympathicotropic, has naturally suggested its use in sea-sickness, in which there is commonly a predominant vagotonia. The action of the drug is threefold: (1) stimulant to the central nervous system, including the higher cerebral centres; hence it has been used with benefit in narcolepsy and post-encephalitic Parkinsonism, as also in various conditions associated with fatigue, depression, and lethargy; (2) pressor to the vasomotor system, an effect which steadily diminishes with repetition, and may finally disappear; (3) it relaxes smooth muscle in the gastro-intestinal tract, especially in conditions of spasm, whether due to reflex, functional, or organic causes; this property has been utilized to facilitate *x*-ray investigation of suspected ulcer and other conditions associated with spasm. Contraindications arise from three sources: excitability, nervousness, insomnia; hypertension and coronary or other established heart disease; conditions of gastric or intestinal atony.

Tainter (1933) describes benzedrine as "pseudo-sympathicotropic," the results from its use not being precisely those of sympathetic stimulation. Except in large doses it has little effect on the pupil. Peoples and Guttmann (1936) found very slight changes in blood sugar and gastro-intestinal activity. Its action on the stomach and intestine has been fully investigated by Myerson and Ritvo (1936), who found that, although it abolished spasm, it had very little effect on peristalsis; unlike ephedrine, as investigated by Van Liere and others (1936), it relaxed the sphincter and allowed the stomach to empty more rapidly than normally. But their observations seem to have been confined to cases of gastro-intestinal spasm, in which benzedrine was used as an aid to *x*-ray investigation. That the action on the stomach is at least in part local is suggested by their statement that the effects reach a maximum in fifteen to thirty minutes and begin to diminish in an hour.

Effect of Benzedrine in Health

Twenty adult volunteers—eleven men (average age 35.2) and nine women (average age 37.5)—were given doses of 10 or 20 mg. In some it was repeated after three days or more. Changes in (*a*) blood pressure, (*b*) pulse rate, and (*c*) subjective sensations were recorded at intervals varying from one hour to twenty-four hours afterwards. All cases here recorded were under observation at approximately the same time of day, so that physiological changes due to such causes as food and exercise might be reckoned with and discounted in estimating the final results.

BLOOD PRESSURE

The most consistent change was a rise of blood pressure. The effects of benzedrine are so variable that there has hitherto been some difference of opinion as to the blood-pressure changes which it produces. Myerson (1936) found no rise of pressure after doses of 10 mg. Peoples and Guttmann (1936) considered the systolic to be more affected than the diastolic. In the present series the systolic pressure rose in every case after 20 mg., and in 80 per cent. after 10 mg. Absence of diastolic rise was seen in those who showed no increase of systolic pressure. In two others there was no change in diastolic pressure until eleven hours after the dose, which was 10 mg. in one case and 20 mg. in the other. (It is probably coincidental, but worth noting, that these exceptions were all women.) A definite rise of diastolic pressure was found in all other cases. On the average it was indeed relatively greater than the systolic increase, but occurred later and was longer sustained. The pulse pressure was raised for the first two to two and a half hours, after which it fell and remained below normal during most of the period of observation.

A systolic pressure originally low showed a greater tendency to rise than one which was at first comparatively high; but there was always some rise. To a less extent this seemed true of diastolic pressure; but a high diastolic pressure tended to fall. The rise in pulse pressure was greatest when the first reading was low. The increase in mean readings after 20 mg. (both systolic and diastolic) was surprisingly little more than it was after 10 mg. This suggests that (*a*) individual sensitivity varies widely, or (*b*) the effect is reduced by repetition. Both factors are probably operative, but a third possibility is introduced by the fact that (*c*) it is in states of extreme fatigue that benzedrine usually produces its most dramatic results. This observation should be correlated with the greater increase in conditions of low blood pressure. From the fact that increased arterial pressure was usually accompanied by flushing of the skin it is reasonable to suppose that the essential change is constriction of the splanchnic vessels. A difference much more striking than that dependent upon dosage was the greater susceptibility of males as compared with females, particularly to small doses (10 mg.). It is true that in so few as twenty cases there is room for the confusing irruption of coincidence. The same criticism may well be levelled against all the foregoing observations, which must therefore be accepted with equal reservations.

PULSE RATE

By the end of an hour the resting pulse rate had increased in seven cases, with a mean rise of 9.4 per cent. In five cases it was unchanged. In the remaining eight it was slowed, with a mean retardation of 12.6 per cent. Cases with no rise in pulse rate after an hour showed a systolic increase which was slightly less and a diastolic increase considerably more than the average for the whole group. The action of a carotid sinus reflex may be presumed. From the end of the second hour some degree of quickening of the pulse was the rule.

SUBJECTIVE EFFECTS

1. The commonest group of changes reported were gastro-intestinal. Impaired appetite, constipation, and various forms of mild abdominal discomfort occurred in ten cases (50 per cent.). Recovery was complete within twenty-four hours. It is noteworthy that only two out of that number experienced any degree of euphoria.

2. Eight patients (40 per cent.) felt distinctly exhilarated, and this effect was much more pronounced than any of those in the first group. Stimulation of the higher centres was shown in unwonted talkativeness and vivacity. Five of the eight also commented on increased physical energy.

3. In seven others (35 per cent.) there was unmistakable stimulation, but the effect was decidedly disagreeable—flushing and sweating on slight exertion, and sometimes a disconcerting tremulousness. Three patients described all the bodily changes of fear without the corresponding emotion.

4. Six (30 per cent.) complained of insomnia, even twelve hours after taking the drug. Four of these had previously enjoyed pleasant stimulation.

5. Other undesirable effects were: disturbed salivary secretion, thirst, unpleasant taste in the mouth (25 per cent.); cardiac effects, palpitation and evanescent precordial discomfort (20 per cent.). Three patients (15 per cent.) complained of subsequent fatigue and depression, without insomnia; one of these had been slightly stimulated mentally, the other two had experienced only tremor and unpleasant excitement.

6. Three patients felt no change after 10 mg.

EFFECT ON MOOD

The effect of benzedrine on mood varies from time to time in the same person. Conditions of greatest fatigue seem to show the most striking excitation. Wilbur and others (1937) have found that psychoneurotics "who are anxious, highly nervous, and apparently stimulated had their previous condition exaggerated." Stimulation is not always pleasant.

Effects of Benzedrine in Sea-sickness

For various reasons it is not feasible to make accurate records of blood pressure in the sea-sick. The observations here described were therefore confined to changes in pulse rate, the patients' general condition, and the various signs and symptoms of sea-sickness.

Price (1933) has described as one of the clinical signs of low blood pressure "increase in the cardiac rate of more than 10 per minute when the individual assumes the upright posture after lying down." This rule had to be modified according to the limitations imposed by fully developed sea-sickness, the victims of which show a not unnatural reluctance to stand up for any such purpose. The pulse was counted with the patient first recumbent, then sitting up in bed. Ignoring the brief acceleration occasioned by the effort of rising, which ends usually in from 5 to 10 seconds, one finds that the average pulse rate in health increases by roughly 10 per cent. In proportion as the increase in rate exceeds this figure, systolic pressure and pulse pressure are likely to be lower than normal.

For the purposes of this analysis one hundred cases of sea-sickness have been examined. Except in so far as conditions of hypertension, cardiac disease, and any unusual degree of excitability are contraindications to the use of benzedrine, these cases were taken consecutively as they presented themselves, and were not in any other sense selected. As it takes some time to collect data of one hundred sea-sick cases aboard a liner justly famed for her stability, the period of the investigation has allowed of some coming under observation on a second occasion, when previous knowledge of their response to disturbing movement proved of the greatest value and threw light on the possibilities of prevention.

Age and Sex Incidence

The sea-sick group comprised eighty-two women and eighteen men. Their average ages were 36.6 and 33.2 respectively, thus closely approximating to those of the normal cases already described. The decennial age group 25–35 included twenty-seven, and thirty-two were between 35 and 45. That is to say, fifty-nine of the hundred were between 25 and 45, which corresponds to the usual distribution.

The ratio of eighty-two women to eighteen men should not be taken as a true index of the sex incidence of sea-sickness. By one of the oddities of human nature men will often conceal it if they can.

Classification of Results

The classification of results was necessarily somewhat arbitrary. They were grouped in three categories: (1) satisfactory results, (2) doubtful results, (3) failures.

(1) *Satisfactory results* were obtained in thirty-nine cases, in all of which the improvement was unequivocal, every likely fallacy having been carefully excluded. Those responding to benzedrine alone showed a mean pulse rate of 69 recumbent, increasing by 18 per cent. on sitting up; in the group of failures the corresponding figures were 77 and 11 per cent.—that is to say, a tendency to vagotonia predominated in the first group. It is doubtless in the vagotonic variety of sea-sickness that benzedrine finds its greatest usefulness. In its mode of onset this sickness reproduces in slow motion the prologue to an attack of syncope, especially that attributed by Gilchrist (1937) to a hypersensitive carotid sinus: an uneasy sense of helpless weakness, a light-headed feeling of dizziness, cold sweats, and vague abdominal unrest, accompanied by slowing of the heart-beat and an abrupt fall of vasomotor tone. The clinical signs point to a disturbance of the stabilizing control of the circulation whereby the effects of low arterial pressure are neutralized by tachycardia, and vice versa. Hence the predilection of the patient for the horizontal position.

(2) *Doubtful cases* numbered forty. This group comprised not only those of whom it was doubtful if they had improved but also those concerning whom there was any room for doubt as to how improvement had been brought about. The following factors were taken into account:

(*a*) Age of Patient.—Experience shows that sea-sick patients in their teens usually recover, with or without treatment, sooner than those ten or twenty years older. All patients under 20 have therefore been relegated to the "doubtful" class, whatever spectacular results ensued. It may be mentioned here that for young children even very small doses of benzedrine seem to be unsuitable, while in the elderly its pressor effect is a definite contraindication.

(*b*) Duration of the Attack.—Another of the lessons of experience is that natural recovery occurs in the majority of cases after about the third day. This may be due to adaptation to the movement, but on the other hand it is exceptional for consistently bad weather to continue for more than three days. Cases with a history of three days or more were therefore likewise classed as "doubtful."

(*c*) Any evidence of spontaneous improvement before treatment was begun was also assumed to prove that any benefit observed might be due to a natural tendency to recovery.

(*d*) The vagaries of Atlantic weather further confused the issue in some cases. The ordinarily sea-sick person is apt to be indifferent to minor changes of weather, but there are times when the improvement must be manifest to all but the moribund.

(*e*) Undesirable side-effects of the drug, such as abdominal discomfort, thirst, flushing, sweating, palpitation, and insomnia, sometimes spoiled an otherwise satisfactory result.

(*f*) In some cases recovery was only partial, as, for example, when headache and vertigo disappeared but nausea remained. At other times benzedrine seemed to produce or aggravate headache. Occasionally vomiting stopped but a sense of nausea persisted.

(*g*) The influence of other drugs previously taken by the patient, and still likely to be capable of producing some effect, was a further source of confusion which made some results appear very doubtful indeed. This difficulty applied particularly to proprietary and other remedies of unknown composition.

(*h*) Ailments other than sea-sickness were present in some cases; such were asthma (which may be a vagotonic manifestation), pre-existing gastric disorder, and the morning sickness of early pregnancy.

Finally, intrusive psychological factors had to be reckoned with. It does not require much experience of sea-sickness to recognize the type of patient who is fatalistically expectant and whose expectations are therefore seldom wrong. These cases present a problem which is more than therapeutic in the ordinary sense. (Certain cases in the "doubtful" category may have been partial failures because one has neglected to pay due attention to the ever-present psychological factor; but the primary aim of the investigation was the action of benzedrine.)

Another difficulty which is mainly psychological arises with patients unable to converse in English. Even with the aid of an accomplished interpreter it is usually impossible to evaluate changes in mood and general sense of well-being. Psychological influences may be helpful rather than harmful, but such cases also have had to be excluded from records of successful benzedrine treatment. Instances of these are the patient who has on a previous voyage derived benefit from benzedrine and swallows it with an access of confidence, and the other who, expecting some sort of sedative, quietly turns over and falls asleep.

3. *Failures.*—There is more to be learned from a critical study of the causes of failure than from the complacent contemplation of success. Analysis of the twenty-one cases which failed to respond satisfactorily to benzedrine yields the following conclusions:

(i) Most cases of sea-sickness being amphotonic—that is, combining both vagotonic and sympatheticotonic elements—benzedrine alone, even in the presence of definite signs of vagotonia, is apt to swing the balance towards the other extreme. It is best given in suitable combination.

(ii) In some cases of extreme vagotonia, accompanied probably by high sympathetic threshold, the dosage (usually 10 to 20 mg.) was apparently not adequate. In others there was definite improvement which lasted but two or three hours, and might well have been maintained had the dose been repeated.

(iii) Insufficient attention was paid to the influence of associated disorders, chief among which in this series was constipation, a condition interfering very definitely with the process of adaptation. Contrary to the findings of Myerson and Ritvo (1936)—in different conditions—most of the cases at present under review appeared to have peristaltic activity either suppressed or delayed.

(iv) Resistance to the effects of benzedrine was encountered in only one case, that of a woman of 50. Vomiting stopped after 20 mg., but no other objective or subjective changes were apparent; nausea and vertigo persisted. These symptoms finally disappeared after two further doses of 30 mg. each, when the first complaint of headache was recorded and there was slight interference with sleep. Twelve hours later no evidence of any benzedrine action could be found, and the patient appeared to have made a spontaneous recovery. It is fortunate, in dealing with such cases, that even if the effects of benzedrine are wholly bad they are not long continued. From laboratory investigations reported through the courtesy of the manufacturers, Messrs. Smith, Kline, and French (1937), it appears that the drug is fairly readily destroyed in the body.

(v) In ten cases the results were unsatisfactory, but none of the above causes supplied any explanation. The average age of these cases was 46, exactly ten years more than the average for the series. Although the circulatory changes could not be distinguished clinically from those of the remainder, it may be that after 45 there is a tendency for undesirable pressor or other effects to be produced.

General Commentary

A study of the data provided by the cases here described yields two interesting generalizations regarding the action of benzedrine. (1) When euphoria has resulted the subsequent depression is insignificant in degree and duration compared with the preceding exaltation; probably the reaction coincides with the period of sleep. (2) The effects appear very rapidly, but are long-continued, as if a succession of interdependent physiological changes had been initiated by the action of the drug. The rapid effect on gastric spasm, suggesting a local action, is obviously of great value in sea-sickness. It is certainly remarkable how seldom benzedrine is vomited, even by patients who have openly despaired of being able to retain it.

Enthusiasm for a new drug must be tempered with sound scepticism and the results scrutinized with care. These conditions granted, there is still reliable evidence that benzedrine is a valuable aid in the treatment of certain types of sea-sickness. It is not a rival to old-established methods, but a useful ally. The effect is greater and more lasting when benzedrine is combined with other remedies, because cases of sea-sickness seldom fit conveniently into the twin pigeon-holes of vagotonia and sympatheticotonia: the majority show features characteristic of each. Further, the effect is augmented by the vagus-inhibiting properties of belladonna *et hoc genus omne*, while in the presence of concomitant sympathetic activity bromides or barbiturates prevent unpleasant restlessness and insomnia without, apparently, interfering with the gastro-intestinal or circulatory effects of benzedrine.

For the suppression of sympathetic activity, especially that associated with dread of sea-sickness, bromides rank high. Combined with chloral hydrate they produce results not yet surpassed by any of the more elegant products of the modern pharmaceutical laboratory. An effective method of administration, favouring retention and absorption, is:

Sodium bromide	60 grains
Chloral hydrate	30 grains
Spirit of chloroform	q.s.

Water to one ounce.

Of this the dose is one teaspoonful every half-hour. Before there is any possibility of overdosage the patient drops off to sleep and thereby lengthens the intervals. Coincident vagal activity may be controlled by belladonna or counteracted by the sympathicotropic action of benzedrine, of which 10 or 20 mg. may be incorporated in the first ounce of mixture. Thereafter the dosage and intervals should be adjusted to meet the needs of the case. Benzedrine is best omitted in the late afternoon or evening, as its stimulant effect is usually prolonged; even 60 grains of bromide will sometimes fail to prevent insomnia. The slow elimination of bromides is sometimes quoted as a drawback to their use. But in the not infrequent case of sea-sickness where unpleasant after-effects are apt to continue for a time on land this objection may be discounted. Even in protracted sea-sickness it is exceedingly unlikely for bromism to develop. If the patient fails to respond to the treatment suggested above, the case should be carefully reviewed before any other sedative drugs are given.

Advantages and Disadvantages of Barbiturates

The main advantages of barbiturates are that they are more palatable and convenient, and more rapidly excreted. The latter property is advantageous in short crossings where only a brief action is desired. Those members of the group which find favour as hypnotics are eliminated more rapidly than those used as general nervous sedatives. The action of sodium amytal, for example, is usually too evanescent for the ordinary case of sea-sickness. The same is true of its isomer, nembutal, and of evipan and pentothal. A more prolonged effect follows the use of dial. Luminal is excreted still more slowly. Elimination of barbitone itself (veronal) is slower than that of any of those mentioned. It is not free from the danger of cumulative action. In common with most, if not all, of its derivatives barbitone in repeated doses is apt to produce toxic effects on liver and kidneys. In view of the liability to ketosis in sea-sickness this is a danger to be carefully considered. When barbiturates are given for the control of motor excitability possibly aggravated by benze-

drine it is well to remember that this action is more marked (Hale-White, 1935) in those which have the ethyl group, C_2H_5, replaced by phenyl, C_6H_5; examples of this molecular construction are luminal, prominal, and nirvanol. It might be desirable in certain cases to combine a quick-acting sedative with one more slowly absorbed but having a more prolonged action. In this connexion it should be recalled that luminal sodium is incompatible with chloral hydrate or any salt of ammonium.

Two disadvantages of barbiturates are (1) the occasional occurrence of idiosyncrasy, and (2) the narrow margin of safety with full doses. Mutch (1934) gives the following ratio M.L.D./M.Th.D.: for luminal, 1.3; barbitone, 1.6; soneryl, nembutal, and phanodorm, all 2.4; dial, 2.5; evipan, 5.

Addiction to Benzedrine

Recent publicity has given prominence to the fear that some may learn to partake too freely of benzedrine. But Guttmann and Sargant (1937) and Wilbur and others (1937) have shown that the ecstasies fade with repetition. It is the unstable neurotics who need to be kept from drugs of addiction. These unfortunates, being at discord with life, crave one thing above all others—oblivion. The fact that benzedrine robs them of sleep will quickly make it unpopular.

Summary

1. The clinical effects of benzedrine (beta-phenylisopropylamine) sulphate on twenty adults in normal health have been studied, with special reference to changes in pulse rate, blood pressure, and subjective sensations.

2. One hundred cases of sea-sickness treated with benzedrine, alone or combined, are classified according to results.

3. Benzedrine has great possibilities of usefulness in certain cases of sea-sickness in which there are signs of excessive vagus activity.

My thanks are due to Sister Hilda M. Smith for much valuable help in collecting data for this paper.

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G. Ferrari (*Rif. med.*, August 14, 1937) states that though the risks of pneumoperitoneum are almost negligible provided proper precautions are taken, a number of serious cases have been recorded in which infection of the peritoneum, haemorrhage, puncture of the intestine, emphysema, and embolism have taken place. He records one case of a man, aged 31, who suffered from bronchiectasis complicated by haemoptysis. Pneumoperitoneum was carried out as a haemostatic measure, and the haemorrhage, which had been refractory to drug treatment, ceased. Four days later, however, the patient developed lobar pneumonia complicated by a pulmonary abscess.

A CRITICAL SURVEY OF 349 CASES OF BREECH DELIVERY*

BY

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In reading the published results of breech delivery from a variety of sources we have been struck with the marked disparity in the foetal mortality rates. The recorded figures are so much at variance and some of them are so alarming that we decided to investigate a series of consecutive breech deliveries occurring in the Royal Maternity Hospital, Belfast, during the years 1932–6. This paper is based on a review of 349 consecutive cases. These cases represent a frequency of 6.03 per cent. of all deliveries occurring in the hospital over the same period. In reviewing 638 of our own private cases we found the frequency to be 2.5 per cent. Of the 349 cases 305 were primary breech presentations. Three hundred and thirty-two mothers were delivered of 349 babies—that is, there were seventeen cases of twins in which each child was delivered as a breech. The mothers have been classified into four groups, as shown in Table I.

TABLE I.—*Classification of the 332 Cases*

	Primigravidae	Multigravidae
Ante-natal	67	135
Emergency	48	82
	115	217

With the exception of three cases in which Caesarean section was performed delivery was effected by the classical methods. We wish, however, to draw attention to the fact that the deliveries were carried out by various members of our resident medical staff, and do not represent the results which might be obtained in a series of cases dealt with by an individual obstetrician.

In assessing the results of breech delivery, in our opinion undue stress has been laid on the so-called "complicated breech." In this paper we define a complicated breech as one where there exists an additional risk to the life of the foetus—for example, placenta praevia, contracted pelvis, or marked prematurity. Provided that adequate management is available we do not regard extension of the limbs as a complication. Extension of the legs, in our experience, is the rule in primigravidae. We at once admit that extension of the limbs adds to the difficulties of delivery, especially in a primigravida; but a mother must be a primigravida at some stage in her career, and therefore the term "breech with extended legs in a primigravida" cannot, in our opinion, be regarded as a complicated breech. Published statistics of foetal mortality in breech presentation vary from 30 per cent. to 8.6 per cent. in primigravidae—for example, Gibberd (1931) gives a gross mortality of 30 per cent. and a corrected mortality of 28 per cent. The gross uncorrected foetal mortality in our series was as follows:

TABLE II.—*Gross Foetal Mortality*

	Babies Born	Babies Born Dead	Percentage
All cases	349	118	33.8
Primigravidae	118	28	23.72
Multigravidae	231	90	38.96

* Read in the Section of Obstetrics and Gynaecology at the Annual Meeting of the British Medical Association, Belfast, 1937.

Table III shows the rates for ante-natal and emergency cases.

TABLE III.—*Gross Foetal Mortality*

	Babies Born	Babies Born Dead	Percentage
Ante-natal primiparae ..	70	11	15.71
Emergency „ ..	48	17	35.42
Ante-natal multiparae ..	145	43	29.66
Emergency „ ..	86	47	54.65

In order to obtain the corrected foetal mortality rates we have eliminated those cases in which the death of the foetus was not primarily or directly due to the breech presentation—that is, where another factor was responsible, such as placenta praevia or marked prematurity. Of the total number of babies born—namely, 349—118 were born dead. For the purpose of computing the mortality rate for which the presentation was directly responsible we have eliminated 103 cases of foetal death, as shown in Table IV.

TABLE IV.—*Cases Eliminated to Obtain the Corrected Foetal Mortality*

	Ante-natal		Emergency		Total
	Primiparae	Multiparae	Primiparae	Multiparae	
Macerated foetus	1	12	3	8	24
Version for placenta praevia ..	—	5	1	17	23
Hydrocephalic monsters	1	3	2	3	9
Anencephalic monsters	2	5	1	—	8
Placenta praevia; foot extracted (primary breech)	1	1	—	4	6
Spontaneous prematurity	1	4	—	1	6
Albuminuria; induction of premature labour	—	2	—	3	5
Accidental haemorrhage	—	1	—	2	3
Version for prolapse of cord ..	—	1	—	2	3
Albuminuria; spontaneous prematurity	—	—	2	—	2
Version for placenta praevia and prolapse of cord	—	2	—	—	2
Version for neglected shoulder ..	—	—	—	2	2
Version for transverse lie and prolapse of cord	—	1	—	1	2
Albuminuria, hydramnios, and contracted pelvis	1	—	—	—	1
Version for brow presentation ..	1	—	—	—	1
Eclampsia; induction 34 weeks ..	—	—	1	—	1
Albuminuria and version for transverse lie	—	—	—	1	1
Version during induction for heart disease	—	—	—	1	1
Pyelitis of pregnancy; spontaneous premature labour 32 weeks	—	—	—	1	1
Albuminuria; previous stillbirth ..	—	1	—	—	1
Spontaneous prematurity at 32 weeks and prolapse of cord	—	—	—	1	1
Totals	8	38	10	47	103

If we eliminate these 103 cases both from the total number of babies born—namely, 349—and from the total number of babies born dead—namely, 118—we find that of 246 babies born, in fifteen the presentation was responsible for the death of the foetus. The corrected foetal mortality rate for which the presentation was responsible was thus 6.10 per cent. for all cases. Similar treatment of all the four groups of cases described in Table III gives the corrected foetal mortality for each group. Table V shows the gross and corrected foetal mortality rates for all groups.

It will be seen that the corrected foetal mortality for primiparae is 10 per cent. and for multiparae 3.42 per cent. Three additional facts emerge from Table V: (*a*) that the corrected foetal mortality rate in primiparae admitted as "emergencies" is almost four times as great as that in primiparae who had received adequate ante-natal supervision; (*b*) that the most common causes of foetal death in multiparae, both "ante-natal" and "emergency," are to be found in the associated conditions; and (*c*) the complicated breech, as we define it, is more common in the multiparae. Table VI shows the mortality rates of other writers.

TABLE V.—*Gross and Corrected Foetal Mortality Rates*

Group	Gross			Cases eliminated	Corrected		
	Babies Born	Babies Born Dead	Per cent.		Babies Born	Deaths due to the Presentation	Per cent.
Ante-natal primiparae	70	11	15.71	8	62	3	4.84
Emergency primiparae	48	17	35.42	10	38	7	18.42
All primiparae ..	118	28	23.72	18	100	10	10
Ante-natal multiparae	145	43	29.66	38	107	5	4.67
Emergency multiparae	86	47	54.65	47	39	0	Nil
All multiparae ..	231	90	38.96	85	146	5	3.42
Total primiparae and multiparae	349	118	33.81	103	246	15	6.10

TABLE VI.—*Foetal Mortality Rates of Various Writers*

Author	Primiparae		Multiparae		All Cases	
	Gross	Corrected	Gross	Corrected	Gross	Corrected
Allan (1935) ..	Per cent. —	Per cent. 15.6	Per cent. —	Per cent. 12.3	Per cent. —	Per cent. —
Gibberd (1931)..	30	28	20	15	—	—
Goethals (1936)	—	—	—	—	26	6.9
Westman (1931)	—	11.2	—	5.2	—	8.8
Bourne (1931) ..	—	11	—	8	—	—
Pierson (1933) ..	8.6	8.6	19	13	13	10.8
Macafee and McClure ..	23.72	10	38.96	3.42	33.81	6.10

These figures show a wide variation, but none of these writers enumerated in detail, as we have done, the cases they eliminated to obtain the corrected foetal mortality rates. We have taken the figures they describe as gross and corrected rates from their publications.

Maternal Complications

Maternal Morbidity.—Nineteen mothers were morbid according to the British Medical Association standard—that is, 5.9 per cent. This figure includes five deaths. The average morbidity rate for the hospital during the period under review was 6 per cent. In none of the patients who died was the presentation *per se* responsible for the fatal issue. Two were cases of placenta praevia—one of which ended in death from puerperal sepsis—two of multiple pregnancy, and the fifth patient was admitted dying from cardiac failure the result of aortic regurgitation. In the remaining fourteen cases the morbidity was due to puerperal sepsis—that is, there were in all fifteen cases of puerperal sepsis, or 4.5 per cent. This is a high incidence of sepsis, and is without doubt referable to the increased manipulations required during delivery.

Post-partum Haemorrhage.—This complication occurred in eleven cases (3.3 per cent.). Two of these patients died.

Complete Perineal Laceration.—This occurred on four occasions (1.2 per cent.); all the patients were primigravidae.

Management of the Breech Presentation

It is evident from the foregoing tables that the results of breech presentation, while not so alarming as some writers indicate, show foetal mortality rates of 6.10 per cent. for all cases and 10 per cent. for primiparae, yet we are definitely of the opinion that there are certain essential precautions which should be taken to reduce this figure still further.

Obviously in the short time at our disposal only the outstanding features of the management can be discussed.

First and foremost is ante-natal care, and this resolves itself for the present purpose into the practice of external version. At any stage after the thirtieth week of pregnancy external version should be performed in all primigravidae as soon as the breech presentation is discovered. The likelihood of failure increases with the approach of term on account of the increasing size of the foetus and the tendency to fixation of the presenting part.

We are of the opinion that in multiparae the presentation should be corrected, if possible, not later than the thirty-fourth week. We at once admit Dearnley's (1931) contention "that spontaneous version to a vertex presentation occurs in a large percentage of cases at about the thirty-fourth week to the thirty-fifth week of gestation," but as yet we have discovered no method of diagnosing the case in which this is going to occur. Once version has been successfully performed the patient should be re-examined every week until the onset of labour. This is specially indicated in multiparae, in whom we have found it necessary to correct the presentation on several occasions. In 134 patients upon whom we performed this manœuvre one foetus was born dead, its death being directly due to the version—a foetal mortality rate of 0.74 per cent. The experience of other writers is given in Table VII.

TABLE VII.—*External Version*

Author	No. of Cases	Foetal Mortality
Gibberd (1931)	232	2 per cent.
Allan (1935)	100	Nil
Sloane Hospital for Women (1933)	91	2.2 per cent.
White (1933)	293	5 per cent.
Macafee and McClure	134	0.74 per cent.

FIG. 1.

FIG. 2.

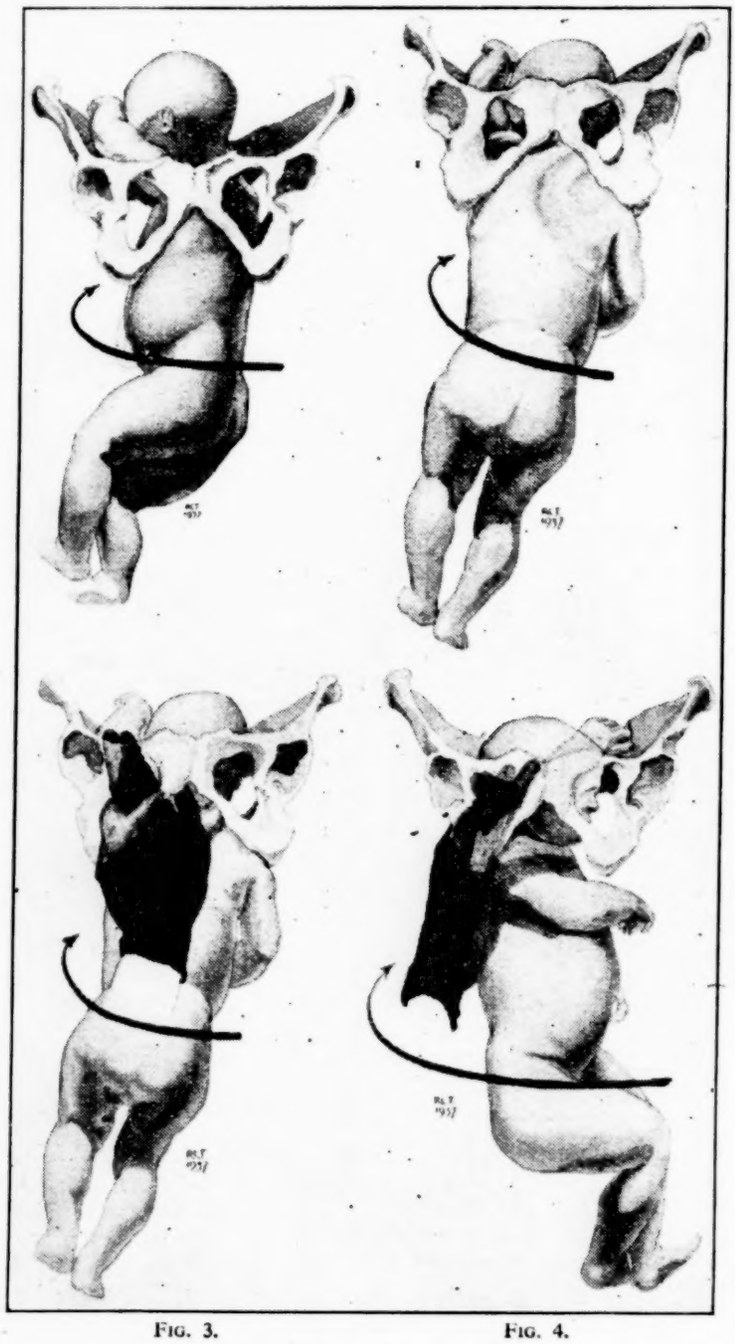

FIG. 3.

FIG. 4.

We consider that external version should be performed with the greatest gentleness. An anaesthetic should not be administered lest undue force be employed, resulting in separation of the placenta, a complication we have witnessed. The so-called "light anaesthesia" advocated by some writers is of little value, as sufficient relaxation is not obtained. We have found the Trendelenburg position to be of great assistance, and it has enabled us to perform external version in cases where the legs have been extended.

Attempts at version should not be continued in the presence of convulsive movements of the foetus, since these indicate serious foetal embarrassment. Marked slowing of the foetal heart is another indication to desist. The risk of the onset of premature labour is slight. One of our successful versions was followed by slight ante-partum haemorrhage and the onset of labour twenty hours later. The child was born alive. As regards delivery, we would stress the importance of "the policy of non-intervention" until the breech has ceased to advance. Any alternative measures at once come under the heading of "meddlesome midwifery."

In the vast majority of cases the breech advances until it reaches the pelvic floor even though the legs be extended. In the light of our experience we must disagree

with Bourne (1931), who states "that if the legs are extended they should be brought down at the beginning of the second stage of labour, except the child be so small that no obstruction be anticipated. . . . I believe that it is wise to bring down at least one leg, and often two, depending on the size of the baby, in all cases as early as the os will conveniently and safely admit the hand." This practice may be reasonably safe in the hands of an experienced obstetric surgeon, but if generally adopted it must add considerably to foetal and maternal risks. We extract legs only under the circumstances mentioned above—that is, when the breech has ceased to advance. An episiotomy should always be performed as a preliminary step in primigravidae and, if necessary, in multigravidae.

In nearly every case where the legs have been extended it is found that the arms are also extended. In bringing down the posterior arm we adopt the classical method; but we fail to agree with the usual instructions of standard textbooks regarding the method of dealing with the anterior arm. For example, Solomons (1928) and Munro Kerr (1916), to mention only two authorities, advise that if the anterior arm cannot be brought down easily, as an anterior arm, the child's back and occiput should be rotated across the hollow of the sacrum. As we will point out, the foetus is thereby forced to retrace a portion of the arc it has already traversed naturally. We find almost invariably that these instructions are not only unnecessary but add greatly to the difficulty. Before extraction of the posterior arm it will be found that the foetus is lying with the bisacromial diameter in the antero-posterior diameter of the pelvis (Fig. 1). When the posterior arm has been extracted two changes occur: (1) the foetus descends, and (2) it rotates so that the bisacromial diameter now occupies the transverse or oblique diameter *with the back in front* and the anterior arm lying at the side of the pelvis (Fig. 2). From this position the arm can in the majority of cases be easily brought down (Fig. 3). In the few cases where there is difficulty the natural rotation of the shoulders should be augmented artificially till the bisacromial diameter occupies the antero-posterior diameter, when the arm can be extracted (Fig. 4).

Most authorities recommend that the shoulders should be rotated in the opposite direction on account of the risk of the arm assuming the nuchal position. This risk is negligible, and can be prevented by the operator placing the hand (corresponding to the foetal arm) with the first two fingers extended along the humerus and maintaining pressure during the act of rotation as we have above described it.

The great objection to rotating the shoulders in the direction usually advised is that the head may assume the occipito-posterior position. Munro Kerr recognizes this risk in his description of the method of rotation to bring the anterior arm into the posterior position, and to avoid it advises continuing the rotation beyond the middle line. This manœuvre, whereby the occiput is rotated posteriorly or the neck severely twisted, is dangerous and complicated compared with the safe and simple method we adopt. Apart from extraction in a contracted pelvis, posterior rotation of the occiput gives rise to the greatest difficulty met with in the delivery of the after-coming head, and is responsible for a high foetal mortality. Hence our insistence on the maintenance of the normal mechanism in dealing with the anterior arm. No good ever comes from interference with normal mechanism. Extraction of the after-coming head is accomplished by the usual methods, but we insist on slow and gentle delivery to prevent tentorial tears. Holland (1937) has shown that these tears are much more likely to cause the death of the foetus than asphyxia, the excuse for rapid delivery.

Summary

1. A series of 349 consecutive cases of breech delivery is reviewed.

2. The corrected foetal mortality in primiparae is 10 per cent., in multiparae 3.42 per cent., and in all cases 6.10 per cent.

3. Stress is laid on the value of ante-natal version, the method of dealing with the anterior arm, and the extraction of the after-coming head.

4. There is an increased risk to the mother from puerperal sepsis.

We are indebted to Professor C. G. Lowry and Mr. H. L. Hardy Greer for permission to use the data from which this paper was prepared. We have also to thank Mr. L. A. Bullwinkle, Registrar-General for Northern Ireland, and Mr. J. Scott of his department, to whom we submitted the statistics. We are also grateful to Dr. T. S. Hall of the Lancashire Public Health Service for his constructive criticism.

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Vigoni (*Scalpel*, Liége, July 31, 1937, p. 1095) emphasizes the difficulty of dealing adequately with the numerous cases of tropical ulcer which are so common in certain countries. The outstanding features of the disease are the rapid development, the slow convalescence, and the long period of incapacity which follows. The ulcer may be pneumococcal in origin or may be due to any one of a variety of microbic organisms. Tropical ulcer occurs most commonly on the foot or leg. It is first noticed as a small pustule. This breaks down, leaving a red or brownish ulcer, which extends rapidly downwards and on the surface until it has become of a considerable size and may even cover the whole leg. Osteomyelitis of the adjacent bones may be seen, and in some cases the ulcer invades and destroys the tendons on the dorsum of the foot. Although in the majority of cases the leg or foot is affected, ulcers of this type may also be seen on the arm and back. It has been noticed that the lesion is much more prevalent in the wet than in the dry season. Trauma followed by infection would appear to be causative, and as the native population have no protection for the feet and legs the predilection of the disease for the lower limbs may be accounted for. There is no specific medical treatment for tropical ulcer, but hospitalization with rest and conditions of hygiene is essential. Intermittent irrigation, following the method of Carrel, has been found to be of great value, as has the use of Dakin's solution. Surgical treatment is necessary in those cases in which there is a considerable loss of tissue, which must be replaced by a graft. Excision followed by suture is only applicable to those ulcers which have a diameter of less than 2 cm. Necrosis and recurrence of the lesion are common, and infection after excision may occur, due to the microbic infection of the primary ulcer. Healing is very slow as a rule. Operation was carried out in 528 cases, with healing by first intention in 337 instances. The various operative procedures are described.

THE REQUIREMENTS OF SODIUM CHLORIDE

BY

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A widely recognized complication following the administration of large amounts of saline solution rectally or parenterally is the occurrence of oedema of the lungs or the extremities. Coller, Dick, and Maddock (1936) showed that this oedema is the result of the administration not so much of large quantities of water as of excessive amounts of sodium chloride, for the oedema will disappear if glucose solutions are substituted for salt solutions. Jones and Eaton (1933) pointed out that a reduction of the protein intake such as occurs in certain gastro-intestinal disorders, profuse surgical drainage, the general effects of sepsis, and the loss of serum protein by massive haemorrhage, all lead to a reduction in the serum proteins of the blood. There is thus a diminution in the osmotic pressure exerted by the blood colloids, and this diminution probably accounts for the tendency to oedema which arises when the tissue reserves of chloride are raised. We have observed that following repeated injections of sodium chloride solution oedema may occur before chloride appears in the urine in more than negligible proportions.

Recently Maddock and Coller (1937) have established criteria as to the correct amounts of fluid required by patients at rest, after operation, and in conditions of dehydration. We think it advisable to add criteria which we have obtained as to the amounts of sodium chloride required by the body in health and in hypochloraemia.

The Basal Requirements of Sodium Chloride

The usual daily intake of 6 to 12 grammes of sodium chloride in an ordinary diet represents an amount in excess of the actual needs of the body, the excess salt being excreted in the urine. In order to ascertain the basal requirements of salt we selected three healthy male subjects who were confined to bed because of fractures of the leg. For the first three days they were given the usual ward diet. Twenty-four specimens of urine were collected and the daily sodium chloride excretion estimated.* Blood specimens were collected daily for plasma chloride and haematocrit estimations.* Following this control period each subject was given a diet as low in chloride as possible, compatible with ensuring a balanced diet and with using foodstuffs which were readily procurable. After six days on this diet alone (salt intake approximately 2.1 grammes daily) the salt intake was increased by the addition of 2 grammes a day for three or four days, and then by the addition of 4 grammes a day for three days.

* The plasma chloride (as NaCl) was estimated by van Slyke and Sendroy's method on oxalated specimens of blood, which, however, were not collected under paraffin. The same method was used for the urinary chloride. The haematocrit estimations were made by means of capillary haematocrit tubes.

The following basic salt-poor diet was given to two of the three subjects:

		NaCl Content
Brown bread	150 grammes	0.911 gramme
Butter	45 „	0.545 „
Milk	300 c.cm.	0.318 „
White fish	100 grammes	0.106 „
Egg	1	0.063 „
Chicken	60 grammes	0.060 „
Tomato	100 „	0.034 „
Potato	75 „	0.028 „
Cream	30 c.cm.	0.024 „
Apple	200 grammes	0.010 „
Orange juice	100 c.cm.	0.003 „
Sago	10 grammes	0.002 „
Gooseberry jam	120 „	—
Sugar	45 „	—
		2 104 grammes

This diet contains 189 grammes of carbohydrate, 62 grammes of protein, and 75 grammes of fat, and has an energy value of 1,680 calories and a total sodium chloride content of 2.1 grammes.

The findings observed in each of our three subjects are presented in graphical form (Charts I, II, and III). These charts show that, after a diet containing 2.1 grammes of sodium chloride has been taken for six days, the salt excretion falls and is about 2 grammes a day. If then salt is added to the diet, the excess salt is excreted in the urine after a latent period of one or two days has elapsed. In Chart III it will be seen that cessation of the salt output occurred as the result of an attack of acute tonsillitis on the eleventh day. When this attack subsided the excess salt was excreted.

We deduced from these observations that for short periods the basal requirement of sodium chloride in health is less than 1 to 2 grammes a day.

Requirements of Sodium Chloride in Hypochloraemia

To observe the effects of salt administration in hypochloraemia we chose a number of patients in whom there had been excessive chloride loss following vomiting due to obstruction in the alimentary tract and to whom known quantities of saline were given (with one exception) only by parenteral routes. In each case the plasma chloride values were estimated before and after administration, while the urinary chloride output was estimated and found to remain negligible. The results are summarized graphically in Chart IV.

From this chart it will be seen that in hypochloraemia about 20 grammes (from 15 to 30 grammes) of salt are required on the average to raise the plasma chloride by 100 mg. per 100 c.cm. (from, say, 400 to 500 mg.). Marked variations, however, are seen in the responses to saline administration. In assessing the significance of these findings it should be remembered that the total amount of sodium chloride normally present in the circulating blood is about 30 grammes, with a tissue reserve of probably double that amount. We believe from personal observations (Falconer and Lyall, 1937) that the undoubted benefits of saline administration are dependent more on the correction of the dehydration than on the alteration of the plasma chloride values, and that salt given in normal solution exerts a greater effect on the plasma chloride levels than when given in concentrated solution. We have evidence to show that, after the administration of saline, chloride may be stored in the tissues and later be used to raise the plasma chloride. These observations probably account for the apparent discrepancies seen in Chart IV.

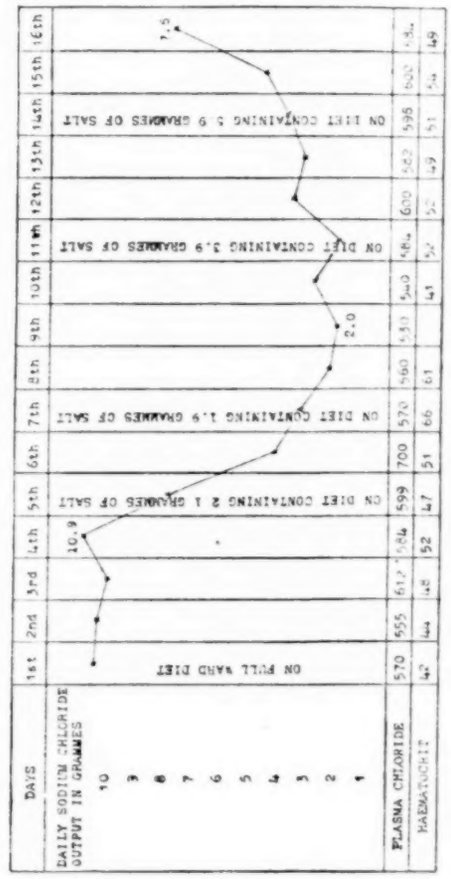
DAYS
DAILY SODIUM CHLORIDE OUTPUT IN GRAMMES
ON PULL WARD DIET
ON DIET CONTAINING 2 1 GRAMMES OF SALT
ON DIET CONTAINING 3 1 GRAMMES OF SALT
ON DIET CONTAINING 4 1 GRAMMES OF SALT
PLASMA CHLORIDE
HAEMATOCRIT

CHART I.—*Showing the daily chloride excretion in a man aged 54 while on a diet containing varying amounts of sodium chloride.*

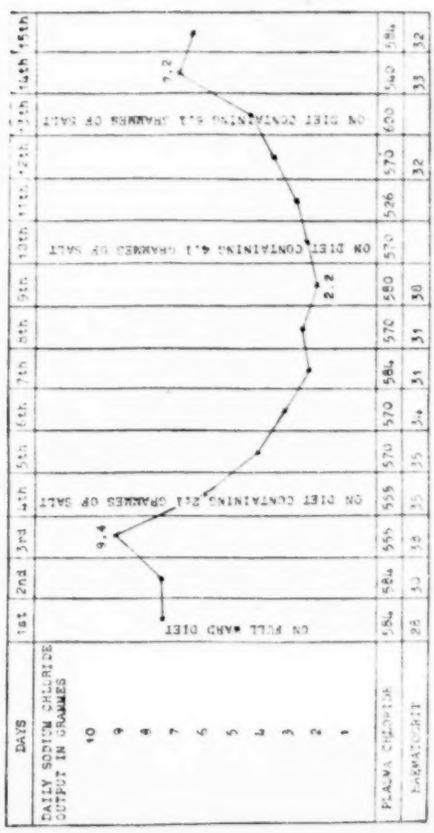
DAYS
DAILY SODIUM CHLORIDE OUTPUT IN GRAMMES
ON PULL WARD DIET
ON DIET CONTAINING 1.9 GRAMMES OF SALT
ON DIET CONTAINING 2 1 GRAMMES OF SALT
ON DIET CONTAINING 3.9 GRAMMES OF SALT
PLASMA CHLORIDE
HAEMATOCRIT

CHART II.—*Showing the daily chloride excretion in a man aged 51.*

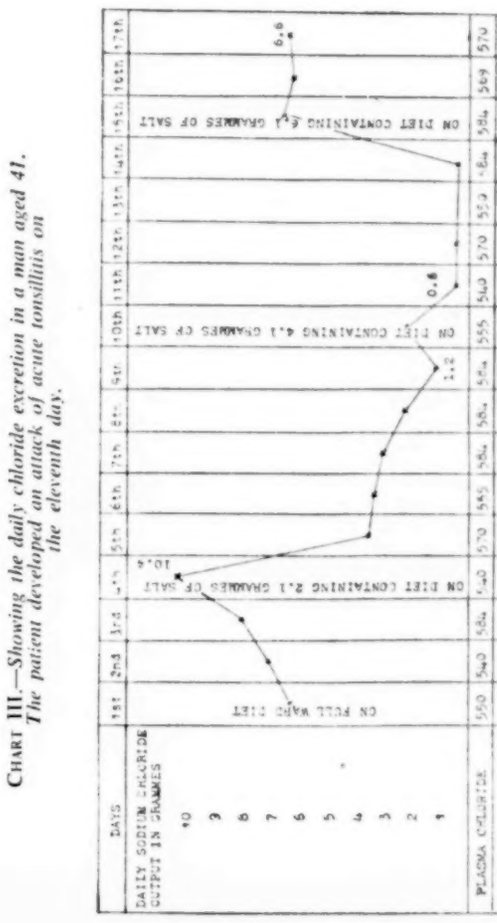
DAYS
DAILY SODIUM CHLORIDE OUTPUT IN GRAMMES
ON PULL WARD DIET
ON DIET CONTAINING 2.1 GRAMMES OF SALT
ON DIET CONTAINING 4.1 GRAMMES OF SALT
ON DIET CONTAINING 6.1 GRAMMES OF SALT
PLASMA CHLORIDE
HAEMATOCRIT

CHART III.—*Showing the daily chloride excretion in a man aged 41. The patient developed an attack of acute tonsillitis on the eleventh day.*

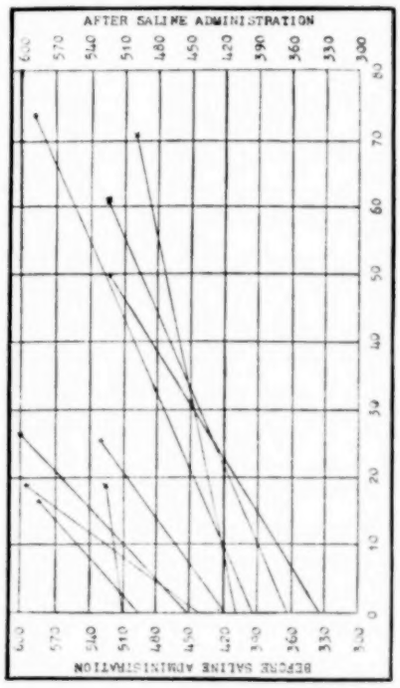

CHART IV.—*Showing the effect of the administration of sodium chloride on the plasma chloride values in cases of hypochloraemia.*

The abscissa represents the amount of sodium chloride given in grammes, the ordinate the plasma chloride in milligrammes per 100 c.cm.

Discussion

In the production of oedema following the administration of large quantities of saline the efficiency of the kidneys plays an important part, for when the renal function is good the kidneys can excrete chloride in the urine in high concentration and so mitigate the possibility of oedema. Very rarely, however, does the urinary chloride concentration approach to that of normal saline, and it is therefore inadvisable in the absence of hypochloraemia to tax the kidneys by the administration of such large quantities of salt as are included in 3,000 to 4,000 c.cm. of normal (0.9 per cent.) saline. Such amounts of solution contain from 27 to 36 grammes of sodium chloride, in contrast to the basal requirement of less than 2 grammes, the ordinary daily intake of 6 to 12 grammes, and the total chloride content of the body in health, which is about 90 grammes.

In administering salines, rectally, parenterally, or by jejunostomy, two factors must be considered—the need for fluid and the need for salt. The first of these is well discussed in a recent paper by Maddock and Coller (1937). An average patient requires at least 2,500 c.cm. of fluid daily in order to ensure an adequate urine output of from 1,000 to 1,500 c.cm. If dehydration is present this intake should be increased to 5,000 c.cm., or even more. As a general rule as much fluid as possible should be taken by mouth and the balance given rectally or parenterally. In all cases the urine output should be recorded, and when it reaches an adequate level the administration of fluid should be curtailed.

The need for salt arises when hypochloraemia is present, as after profuse vomiting, in diarrhoea, or after loss of large quantities of fluid by gastric aspiration or via intestinal fistulae. In such cases sodium chloride is necessary in amounts varying from 15 to 20 grammes daily, and may be given as 1,500 to 2,000 c.cm. of 1 per cent. solution or in larger amounts of more dilute saline. Any additional fluid required may be administered as water by mouth or by rectum, or as 5 per cent. glucose solutions rectally or parenterally. Such amounts of salt as we recommend are adequate to correct chloride deficiency, and contrast with the basal requirements of less than 2 grammes and the usual intake of 6 to 12 grammes. In order to obviate the risk of oedema the plasma chloride should be estimated at least every second day, and when it approaches to 550 mg. per 100 c.cm. the salt intake should be restricted and should not exceed 10 grammes (1,000 c.cm. of 1 per cent. solution) a day.

We wish to thank Professor J. R. Learmonth for his help and encouragement; Mr. F. K. Smith, senior surgeon to the Royal Infirmary, for permission to use his cases; Sister Thomson, dietitian to the Infirmary, for diet sheets; Sister Stephen of the metabolic ward for the meticulous care with which she looked after our cases; and James Ellice for technical help.

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A further gift of £50,000 has been made by Mr. John A. Dewar to the Gordon Hospital for Rectal Diseases, Vauxhall Bridge Road, London. Mr. Dewar had already given £80,000 for the erection of two new blocks of wards, and his latest gift will enable the old part of the hospital to be reconstructed, and thus increase the original accommodation threefold.

SERUM TREATMENT OF TYPHOID FEVER*

BY

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In May, 1935,[1] I published the results obtained when eight bacteriologically confirmed cases of typhoid fever were given an "anti-Vi" and "anti-O" serum prepared by Dr. Felix at the Lister Institute. These results, while insignificant statistically, did suggest that in this new serum we had a remedy of definite value in relieving the toxaemic symptoms of typhoid fever and worthy of further trial. In the present contribution I propose very briefly to review our experiences to date with the Felix serum.

In all, sixty-one cases of typhoid fever admitted to Cork Street Hospital since September, 1934, have received serum treatment. Every case included was bacteriologically confirmed—if not by blood culture, by unequivocal serological findings. Since my original paper was published we have ceased to give serum to mild cases of typhoid, and therefore cases of this type are excluded from this survey, as are, of course, all paratyphoid infections.

Results in Sixty-one Cases Receiving Serum (September, 1934, to July, 1937)

Serum effect excellent	23
Serum effect good	21
Serum effect doubtful	7
Serum effect absent	10
	61

The usual route of administration followed was intramuscular, but the intravenous route has been adopted in some very toxic cases, and the intrathecal in cases presenting meningeal symptoms. The dose given has varied from 15 or 20 c.cm. to 33 c.cm., the latter amount being usual for adults. Serum is given on three successive days. In this series of sixty-one cases there were ten deaths, but it is hardly necessary to point out that a fair comparison of the mortality rate for serum-treated cases with the usual mortality rate for typhoid is not possible because of the fact that the serum-treated cases represent a selected group—that is, were given serum because they were toxic or otherwise seriously ill.

To begin with the debit side of the balance sheet—the ten deaths: three of these were due to perforation. One of the patients was actually the first case in the series, and he had had what we now know to have been a very inadequate dose of serum—a single injection of 10 c.cm. The second perforation was in a woman whose typhoid was complicated by a septic abortion. The remaining case perforated two days after the third 25 c.cm. of serum was given, and the course of the illness seemed to have been uninfluenced by specific therapy. A fourth death occurred in a case of haemorrhagic enteric beginning with nephritic symptoms. This patient's blood culture was positive for *B. typhosus* very early in the disease, and she bled extensively from mucous membranes and into the skin. Because of a temporary shortage of supplies she received only half the usual adult dose of serum. While admitting a doubt as to whether any treatment would have saved her life, I ought to say that the only other haemorrhagic case of enteric included in this survey recovered dramatically after adequate serum treatment. Two other fatal cases were interesting, in that

* Read in the Section of Hygiene and Public Health at the Annual Meeting of the British Medical Association, Belfast, 1937.

[1] McSweeney, C. J. (1935). Clinical Trials with a New Anti-typhoid Serum. *Lancet*, **1**, 1095.

the enteric infection was complicated by streptococcal conditions—namely, erysipelas and septicaemia. In the erysipelas case serum cleared up the enteric symptoms, but the erysipelas relapsed and death took place suddenly from what appeared to be coronary thrombosis several days after the temperature had settled. The septicaemic case ran a protracted course, and the patient died exhausted from multiple abscesses. In another case the patient appeared to do well after serum treatment, but developed mental symptoms at a later date and died. The three remaining fatal cases were not influenced by serum, and the patients died in the typhoid state with the usual concomitant hypostatic pneumonia.

The Effect of the Serum

The effect of the serum I have graded as excellent, good, doubtful, or negative. By "excellent" I mean a rapid drop in temperature with amelioration in toxaemia, the changes taking place within forty-eight hours of the last dose of serum. This result was noted in twenty-three out of the sixty-one cases treated. In some of these the temperature was normal within two or three days of serum administration and remained normal thereafter, except for a temporary disturbance occasioned by the development of a serum rash. The effect of the serum on toxaemia was always more marked than on pyrexia. Toxaemic symptoms generally disappeared within a week of serum administration, and in several of our cases were noted as absent within forty-eight hours of the last dose. In twenty-one cases the effect of the serum was classed as good. By this is meant the inauguration of a brief lysis following serum administration, this lysis being of shorter duration than occurs naturally in typhoid and being accompanied by a marked reduction in the toxic symptoms. In the forty-four cases comprising these two groups the incidence of complications was negligible. Where the patient's symptoms seemed to be only slightly benefited, or where the benefit was temporary, the effect was classed as doubtful, seven cases falling into this category. Where the illness pursued its course completely uninfluenced after serum inoculations the effect was classed as negative; ten cases were of this type.

Two batches of serum seemed to be less potent than others in the fifteen batches so far employed. On reference to Dr. Felix it was ascertained that the failure of therapeutic response with these batches was related to a lower antibody concentration. Apart from this the only disappointing results we have had with the serum were obtained with mixed infections. Several members of one family recently under treatment had a particularly virulent form of infection, and although the response to serum treatment was slow in one of them all recovered. Relapses have occurred twice in serum-treated cases, but repetition of the serum speedily aborted these. Delayed serum sickness is not uncommon after administration of this serum. Urticarial rashes with pyrexia lasting for a few days are the usual effects noted.

Summary

To sum up, in the majority of cases so far treated the Felix serum has been beneficial, sometimes dramatically so. In not less than one-third of the serious cases the results were excellent, in another third they were definitely good, while in the remaining third they were doubtful or negative. The beneficial effects are greater on the toxaemic manifestations of the enteric syndrome than on those attributable to local lesions in the intestine. Complications were exceedingly rare in serum-treated cases.

The position of the Felix serum as a specific remedy in the management of typhoid fever is, in my view, now as firmly established as that of anti-meningococcal serum in the treatment of cerebrospinal fever. Whether its effect is due to its "anti-Vi" or to its "anti-O" concentration, or to both, I cannot say, as all the batches used in our wards contained both antibodies.

Clinical Memoranda

Union of Carpal Scaphoid (by Immobilization) after Six Weeks' Delay in Treatment

The following case of successful treatment of carpal scaphoid fracture by immobilization seems to be worthy of record, as it might encourage others to persevere with non-operative treatment, even in late cases.

On February 9, 1937, the patient, a young woman of 23, sustained a severe injury of the right wrist from "backfire" while cranking a car. This was diagnosed and treated (elsewhere) for six weeks as a "badly sprained wrist." During all this time the patient suffered from persistent pain on the radial side of the wrist, and from

FIG. 1.

FIG. 2.

inability to pick up even light articles or to write at all ("The thumb wouldn't work").

I first saw her on March 12. From the duration of the disability and the location of tenderness in "Cloquet's snuff-box," a provisional diagnosis of fractured scaphoid was made, and the patient sent for *x*-ray examination. The *x*-ray report (March 13) states, and the negatives show, a transverse fracture of the scaphoid (Fig. 1). On March 14 the wrist was put up in a plaster-of-Paris splint ("dorsal slab," etc.) in extension and slight ulnar adduction, from below the elbow to the heads of the metacarpals. The palm was left free from the wrist-joint distally, except that the thumb was immobilized as far as the head of the metacarpal. A stout copper wire was applied across the palm.

From this moment pain completely disappeared, and the patient was able after ten days to use the thumb for all purposes. The grip became very strong, and she carried out all her duties in stripping the coats, brushing, shampooing, and generally "manhandling" dogs of all breeds in the course of her job in a "dog-shop." She also typed, drove a car, or played the piano all the time after ten days. There was no discomfort throughout this period until May 14, when she complained of soreness over the lower end of the ulna. Fearing a pressure-sore,

the plaster-of-Paris splint was removed, and before deciding upon renewal the wrist was radiographed again. Dr. Ff. Roberts reported that the fragments of the scaphoid had now united, and splinting was discontinued, after *eight and a half weeks in the same plaster-cast.*

On May 21 there was full movement of the right wrist-joint in extension, flexion, pronation, and supination. The grip (practised throughout) was unimpaired, and there was no pain and no disability.

Looking back, it is of interest to note that in July, 1921, a most interesting and exhaustive article of eighteen pages by Alan H. Todd (London) on fractures of the carpal scaphoid appeared in the *British Journal of Surgery* (p. 7) which advocated only three to four weeks of immobilization on a cock-up splint, admitted that in some cases the functional result was not good, and recommended in such cases operative removal of the scaphoid. The article concluded: "From all that has been written about fractures of the scaphoid, and the many conflicting accounts that have been given of the results of various treatments, one fact emerges most clearly—namely, *that all methods of late treatment are uncertain and unsatisfactory.*"

Cambridge. R. SALISBURY WOODS, M.D., F.R.C.S.

Cerebral Malaria

A case of cerebral malaria, with recovery, may be of sufficient interest to be placed on record.

The patient, a well-built Irishman of 55, with a pale rather earthy complexion, was admitted to the Albert Dock Hospital at 3 p.m. on August 4, 1937. While walking along the road he had a fainting attack and fell. On admission he was semi-conscious, with very slow cerebration, but answered to a shouted question. His temperature was 99° F., the pulse 86, and respirations 24. The pulse was strong, the breathing loud, and the pupils small and equal. At 6 p.m. jerky twitchings of his hands and feet started, and by 7 o'clock they were almost continuous; his pupils were then dilated, but equal and reacting. His condition at this stage closely resembled an alcoholic coma—a mistaken diagnosis which Dr. Manson-Bahr informs us was made several times during the great war with fatal results. All tendon reflexes were normal, with a flexor Babinski. The temperature was now 102.6°, the pulse 120, and respirations 24. At this point a blood film revealed a heavy infection with malignant tertian rings and crescents. The patient showed extreme irritability and appeared unconscious, but could just be roused at times. Quinine hydrochloride, 3 grains in 10 c.cm. of distilled water, was given intravenously at 9.15 p.m., adrenaline 10 minims, and one capsule of amyl nitrite by inhalation. The quinine was repeated an hour later.

The next morning the temperature was 97°, pulse 84, and respirations 20, and the patient was able to give a history of having been at Takoradi, West Africa, from May 22 to 29; he had had vomiting, with nausea and lassitude, on and off ever since—"never any fever."

A blood count showed: red cells, 2,010,000 per c.mm.; haemoglobin, 45 per cent.; colour index, 1.1; white cells, 6,250 per c.mm.; polymorphs 70 per cent., lymphocytes 25 per cent., and monocytes 5 per cent. The red cells showed anisocytosis and polychromatophilia, some stippling, and heavy infection with malignant tertian rings and crescents. He was given 1½ grains of atebrin three times daily. On the third day there was a rise of temperature to 100°, of the pulse to 96, and respirations to 28, with return of dizziness. Since then the patient has made a good recovery on atebrin, iron mixture, and fluids; a blood film on the fifth day showed malignant tertian crescents only.

We are indebted to Dr. Manson-Bahr for permission to publish this case.

J. SOUTTAR MINETT, M.B., M.R.C.S.
London. A. J. BERNFIELD, M.R.C.S., L.R.C.P.

Reviews

INDUSTRIAL HYGIENE AND MEDICINE

Recent Advances in Industrial Hygiene and Medicine. By T. M. Ling, B.M., M.R.C.P. With foreword by J. A. Nixon, C.M.G., M.D., F.R.C.P. (Pp. 212; 29 illus. 12s. 6d.) London: J. and A. Churchill. 1937.

In this book Dr. Ling has attempted to "survey the more important advances in our knowledge of Industrial Hygiene and Industrial Medicine since the war." The best standard by which his success can be measured is a practical one. Does the book contain, in a practically useful form, the information needed by medical officers engaged in industry, by certifying factory surgeons, and by medical practitioners whose patients are industrial workers? The practical value of the book to industrial medical officers and to certifying factory surgeons is, we believe, definite. Its value to medical practitioners is less obvious, though it may be none the less real.

The book opens with a chapter on the medical supervision of workers in a factory. In this chapter the physiological and psychological principles of occupational selection are reviewed. Chapters follow describing some of the causes of industrial sickness and accident. In view of the current neglect of the emotional, social psychological elements in the aetiology of sickness and accident Dr. Ling is justified in devoting a relatively large amount of space to the psychological factors in health, sickness, and accident. Over-emphasis of the "psychological" is, however, a very real danger. "The neuroses of industry" are discussed in chapter 4 and industrial fatigue in chapter 5. Dr. Ling then turns to consider recent advances in ventilation and lighting; these chapters are well done. Dust and its effects and noise are rapidly surveyed in the following chapters. The concluding chapters deal with lead poisoning, the toxic effects of gases, and industrial dermatoses. All that Dr. Ling has to say concerning the "Advances" in the more strictly medical and toxicological aspects of his subject is compressed into thirty-four pages out of a total of 200.

Perhaps it would have been better if the author had used all of his space for writing a book upon "Recent Advances in Industrial Hygiene and Industrial Psychology for Works Medical Officers." Industrial poisoning is too large and too important a subject to be discussed in a summary fashion. Nevertheless, it must be recognized that Dr. Ling has packed a surprising amount of valuable information into a narrow compass. We can recommend this book to any medical man whose work takes him into factories, and to all medical men who wish to learn something about the psychological factors in industrial illness. Nevertheless, the style is uneven and makes an undue demand upon the reader's attention. A few rather crude clichés occur with irritating frequency. The meaning of the last paragraph on page 69 is not clear to us. We read: "A study of shell-shock . . . revealed the fact that these conditions . . . symbolized the reaction to adverse conditions of people, whose emotional make-up and behaviour had been inappropriate from their early years. In other words, the basic causes were *multiply* [*sic*] determined by early training and environment, while the war acted as a precipitating factor. . . ." On page 68 "sacrostant" should read sacrosanct.

Dr. Ling's task was rendered difficult by the absence of recognized "textbooks" of his subject. When the difficulties which faced him are realized the measure of his success in meeting them becomes apparent.

AUGUSTE FOREL AND HIS WORK

Out of My Life and Work. By Auguste Forel; translated by Bernard Miall. (Pp. 352; 8 plates. 16s.) London: G. Allen and Unwin. 1937.

Auguste Forel, whose autobiography has just been translated into English, is perhaps best known by his study of the habits of ants, which culminated in that remarkable book *Le Monde Social des Fourmis*. Yet this was only one aspect of his many-sided activities, and plays a minor part in this autobiography. Here, without any straining after artistic effect, indeed with a frankness that is sometimes naïve, he draws his own portrait, line by line, till one realizes just how he became the man he did. Born in 1848, that year of revolutions, he seems to have been inoculated with the revolutionary spirit at birth. Brought up in a small town in the Canton Vaud by a mother to whom he was devoted, he nevertheless reacted vigorously against her extreme Calvinism, refused to be confirmed, and remained throughout life a militant agnostic. Yet in other respects the repressive atmosphere of his childhood left marks which endured for some years. Even his consuming interest in ants was checked as evidence of a cruel spirit. Becoming for a time shy and diffident, he was the predestined victim of bullies at school, and as a youth his prudishness prevented him from entering social life, therein differing from his beloved ants!

At last he was allowed to study natural science, and decided on a medical career. Here he found release, and his personality rapidly expanded. From a series of valuable observations on the structure and functions of the brain he was led to take up psychiatry, in which he made a name so soon that at the early age of 31 he was appointed to take charge of the Burghölzli Asylum. Hitzig, an able neurologist of the laboratory type, had resigned, finding himself quite incapable of dealing with the disgraceful conditions obtaining there. Forel, in the face of political and social opposition, resolutely cleared out that Augean stable, and by his policy of "thorough" reduced chaos to order. He tells an amusing story of the tricks to which the morphine addict will resort. One day a fine pie was sent him, by whom he knew not. On cutting the crust it was found to contain hypodermic syringes and a large quantity of morphine. Inquiry revealed that a lady had inserted these in a pastrycook's shop, but by some oversight the pie was addressed to Forel instead of to a morphinist patient in the asylum.

As his outlook widened he became convinced that "alcoholism, social problems, psychiatry, penal law, and science are inseparably connected," and he became an impassioned social reformer in many directions. But he never seemed to think that alcoholism was a symptom—for him it was a prime cause, and he became an apostle of total abstinence, in season and sometimes very much out of season. Was it his Calvinist upbringing that made him increasingly doctrinaire in later life? The complete failure of the gigantic experiment of Prohibition in the United States influenced him not a whit. On he went, sometimes a visionary tilting at windmills, sometimes a practical reformer achieving useful results. No fear of change, no perception of the strength of instinctive prejudices deterred him. In turn feminist, pacifist, internationalist, Bolshevist, but always abolitionist, he welcomed Henry Ford's peace ship and was a League of Nations man before President Wilson. For him there were no shades of grey, everything was clearly black or white. Robert Bridges, in his *Testament of Beauty*, was appalled at the utter slavery of bees and ants, and thought that this was travestied by man's sentimental approach to the subject; Forel, on the other hand, would have had us go to the ant for social enlightenment. Yet when he cut into a nest of the Colombian fungus-growing ants he found them far from peaceful. "In a moment I was bitten by the sharp mandibles of the workers until the blood was running down my hands and face. . . . They pursued me furiously for many yards, biting my clothes and my skin."

His chief steadying influence was his sympathetic and understanding wife. But like many pacifists he remained a single-minded fighter to the last for the truth as he saw it, tongue and pen being mightier for him than the sword—to the very last, for he even wrote his own funeral oration, lest he should be buried with Christian rites. His best memorial will be his work for psychiatry in Switzerland, though his most popular monument is founded on an ant-heap.

FOUNDATIONS OF PHYSICAL CULTURE

The Scientific Basis of Physical Education. By F. W. W. Griffin, M.A., M.D. With a Foreword by Sir E. Kaye Le Fleming, M.A., M.D. (Pp. 200. 7s. 6d. net.) London: Humphrey Milford, Oxford University Press. 1937.

At the present time, when the "powers-that-be" are awakening, albeit belatedly, to the realization of the value of physical culture in individual and national life, a tremendous impetus has been given to the study of physical education and opportunities made for its development. In this nation-wide campaign it is hoped that eventually all school children and young adults will have the recreational facilities they need for improvement of health and physique.

While much attention is necessarily being focused on actual schemes of training to be used, the physiological principles underlying them must be constantly borne in mind so that the best possible use may be made of the periods of training. The opportune publication of *The Scientific Basis of Physical Education*, by Dr. F. W. W. Griffin, will provide a stimulating and provocative book for medical practitioners who wish to have some understanding of the general principles of physical training and the physiological and psychological problems connected with it, the complexity of which is scarcely appreciated by the average medical man. Sir Kaye Le Fleming points out in the foreword that it is essential for the success of the present schemes that they should be closely associated with the science of medicine and that there should be firm co-operation between the physical educationist and the medical practitioner. If the latter is to make any valuable contribution to the work he must be specially informed and observant of the various aspects of physical education.

Dr. Griffin's book will be most helpful in this respect, for it is a serious attempt to summarize the present state of medical and scientific knowledge in regard to the bodily effects of muscular activity. The author discusses briefly and simply the chemical, mechanical, and nervous factors involved in bodily exertion and the changes that take place in the respiratory and circulatory systems in response to increased effort. He suggests the need, hitherto often entirely disregarded, of considering psychological reactions in physical education. His chapters on posture are unusually interesting, and he gives the foot the important place it deserves in determining the cause of postural faults. Having enumerated bad foot habits, it is a pity that he has not similarly enumerated some good habits which would help in maintaining or acquiring a foot of such desirable shape and functioning as he describes. The

final chapter on the classification of physical types is entertaining and makes one appreciate the difficulty of differentiating clear-cut types in a mixed race such as ours which is constantly absorbing and modifying alien strains.

The book closes with an epilogue in which we are reminded that the demand for "bread and circuses," which foreshadowed the fall of the Roman Empire, seems to be becoming our national cry to-day. But perhaps the time may come when the relinquishing of the imperialistic outlook will be regarded not as disastrous, but as a progressive step. The book ends on a hopeful note: that the light of knowledge, of science, and of understanding will make it possible for all members of the community to develop their latent physical and mental capabilities and be able to enjoy and adapt themselves to fuller life in a progressive world. A useful bibliography is appended.

THE CHILD WITH SPASTIC PARALYSIS

Children Handicapped by Cerebral Palsy. Psychological Factors in Management. By Elizabeth Evans Lord. With a Medical Explanation by Bronson Crothers, M.D. (Pp. 105. 5s. 6d. net.) New York: The Commonwealth Fund. London: H. Milford, Oxford University Press. 1937.

This is an admirable guide for all those concerned with the physical and mental training of cases of spastic paralysis in children. A simple medical explanation of the various conditions involved is given by Dr. Bronson Crothers. The physical training is then dealt with, and it is pointed out that all exercises must be of interest and use to the child, relaxation exercises, especially of the eurhythmic type, proving the best. Prediction of the ultimate physical capacity of the child is very important, and it is pointed out that unless he can balance himself by the time he is 6 the outlook is bad.

Difficulties in mental testing and grading are described. These children have difficulties in spatial discrimination but manage numbers better than might be expected. Apart from grading, tests are useful in elucidating the nature of the defect. Teachers of such children must remember their great susceptibility to fatigue and also that their capacity for learning may vary from day to day, though some have fair emotional control and quite good persistence. The greatest difficulty arises with those who have no very obvious physical defect, but a marked feeling of inadequacy, especially when they may have got on fairly well at school but fail hopelessly in the competition of the labour market. Those with serious physical disability usually accept this with reasonable equanimity, though they may be very self-conscious before strangers. The mother's emotional reactions and her refusal to face the handicap often add greatly to the difficulties both of the child and of the teacher.

BUSINESS ASPECTS OF PRACTICE

The Business Side of Medical Practice. By Theodore Wiprud. (Pp. 177; illustrated. 12s. net.) Philadelphia and London: W. B. Saunders Company. 1937.

Mr. Theodore Wiprud is just as emphatic on the lack of business capacity in the vast bulk of the American medical profession as anyone has ever been over our similar shortcomings in this country. He does not probe far into aetiology—the vexed question of the seed and the soil: whether, that is, it is the training and education of the medical student that are at fault, or whether the type of mind that is attracted towards medical practice is inherently repelled by business principles and incapable of assimilating them. In general terms, Mr. Wiprud's advice is just as useful for medical practitioners on this side of the Atlantic as on the other; but naturally, there are sections here and there which are scarcely applicable to British conditions. The style, too, is simple and attractive; the author has more respect for "our maternal englysshe tonge" than some of his compatriots, though he avoids the word "if" very pointedly, and replaces it by "in event" as a synonym. He informs us that 97 per cent. of American citizens die leaving no will; as the intestacy laws vary from State to State (some of them are on the English model, others quite different) his advice as to the making of wills is not unnecessary. It is, very possibly, this problem of differing codes of law on the two sides of every inter-State boundary that accounts for the non-existence in America of any organization corresponding to our medical defence societies—or is it that the American patient is less ungrateful and less litigious? It appears that medical witnesses enjoy privilege in American courts of law, though whether this is universal in all the States is not stated. The interesting development which has not, so far as is known, reached these shores is the system of the "telephone secretarial bureau," which has taken root in six of the larger American cities. Its "major function is to transmit telephone calls from patient to physician. . . . A special listing is inserted in the telephone directory under the doctor's name, reading: *If no answer call* (the bureau's number). In event the physician-subscriber does not answer his telephone . . . the patient calls the bureau, which locates him. . . . Not only are calls relayed but appointments are made according to the physician's instructions."

The typography and format of *The Business Side of Medical Practice* are worthy of the well-known firm by whom it is issued.

Notes on Books

John Melly of Ethiopia, edited by KATHLEEN NELSON and ALAN SULLIVAN (Faber and Faber, 8s. 6d.), is a biography of the leader and organizer of the British Red Cross Ambulance units in Abyssinia. In 1917 Melly left Marlborough to receive a commission in the gunners, with whom he served on the Western Front during the last year of the war. Shortly before the Armistice he was awarded a well-earned Military Cross. Already in France a latent missionary spirit began to show itself in Bible readings with his men, and later at Oxford he was one of the founders of the Oxford University Bible Union. From the university Melly went to St. Bartholomew's, where he became a house-surgeon. During these and later years he presented an unusual combination of the social butterfly and the practical man of religion. Eventually the unchanging ambition to become a medical missionary materialized, and Melly determined to establish a hospital and medical school in Abyssinia. While reconnoitring the country with this object in view the imminence of the conflict with Italy necessarily modified his medical aspirations, for Abyssinia possessed no Red Cross organization. When hostilities actually broke out Melly's knowledge of the country, its people and leaders, his surgical experience, and his enthusiasm for the task in hand marked him as the ideal leader of the British units, which he was so largely instrumental in raising. After surviving the rigours and dangers of the northern campaign Melly met a tragic end, during the days of anarchy at Addis Ababa, at the hands of one of the people he had done so much to help. Apart from some excellent illustrations, this book is scarcely worthy of its theme. It is composed almost entirely of extracts from letters and communiqués, the former too often loaded with trivial and irrelevant matter. There is no feeling of chronology and continuity.

The Avitaminoses, by Professor W. H. EDDY and Dr. G. DALLDORF (Baillière, Tindall and Cox, 20s.), is a work of exceptional interest, since it is concerned primarily with the human disorders and diseases caused by partial or complete vitamin lack. The authors give a full description of the well-known consequences of gross vitamin deficiency, such as beri-beri, scurvy, and rickets. They also discuss carefully the more difficult problem of the effects that may be produced by a suboptimal vitamin intake. Problems of this type are the action of vitamin A in checking infections of the respiratory tract, the influence of the anti-neuritic vitamin on the function of the stomach and the gut, and the relation between vitamin C lack and haemorrhagic diseases. As we have indicated, the authors centre their attention on the problems of chief importance in ordinary clinical practice. Unfortunately it is much more difficult to determine the effect of a partial than of a complete deficiency of a vitamin, and the evidence as regards these important problems is contradictory and confused. The authors cite McCarrison's experiments as models of the type of information that is required. He fed rat colonies for years on diets modelled on those eaten by the poorer sections of the population in India and in England. Such diets produced a remarkable variety of lesions such as pulmonary infections, gastric ulcers, and renal calculi.

The publication of the papers read before the Second International Congress of Medical Advisers for Athletics, held in Berlin in 1936 (Leipzig, Georg Thieme, RM.27; G.R.M. 27.50) is, in effect, a thorough survey of all the medical aspects of athletics. More than eighty papers were read at the six sessions of the Congress, the majority in German, others in French, Spanish, and Italian, and four in English. The four English papers were contributed by two Japanese, a Hungarian, and an American. Most of the papers show evidence of painstaking thoroughness and attention to detail, and the remarkable improvement in the standard of athletics among Continental nations during recent years may be attributed to a large extent to the close liaison between athletics and medicine. Of great interest is the paper by Dr. Miyama (Japan) on the influence of sports upon the circulatory system. Studying the effect of certain substances upon the recovery of the circulatory system from fatigue after bodily exercise, Dr. Miyama noted the beneficial results of administration of glucose and vitamin B, and of oxygen inhalation.

The fifth edition of Professor A. J. CLARK'S *Applied Pharmacology* was favourably noticed in these columns at the close of 1933. A new edition has now appeared (J. and A. Churchill, 18s.). The author explains in his preface that the most important change has been the gathering together in the first quarter of the volume of all those substances which the body either manufactures itself or normally receives in its food. This rearrangement has called for the rewriting of most of the material concerned. Extensive changes in the remainder of the book have been made to bring it into line with recent advances in therapeutics. By constantly keeping this work up to date Professor Clark puts into focus for the practising doctor the results of research in pharmacology and the allied sciences.

Dr. KEITH MACARTHUR BROWN has done a good action by writing *Medical Practice in Old Parramatta* (Sydney: Angus and Robertson, 12s. 6d.). The story after all is not so very old, for it dates from 1790, when the mortality was twenty-five adults and two children out of a population of about six hundred. The doctors were few, and combined the treatment of the sick with the acquisition of land and the care of stock. Much of their practice was gratuitous, but out of the land they occasionally made fortunes. Some of the descendants of these early New South Wales doctors are still living, and by their kindness Dr. Brown is able to illustrate his book with photographs of the pioneers. He traces their history, tells of their virtues and of their quarrels; gives pictures of the houses in which they lived and of the succession of hospital buildings in which they worked. Chloroform came early to the little town, and by good fortune Hogarth Pringle soon introduced Listerian methods into its surgery. He had been educated at Edinburgh, had worked under Syme and had thus become intimate with Lister. The book is full of interesting detail and is well worth reading. Dr. Brown should be encouraged to write his personal reminiscences, for there is still much to be told about the town itself and why Parramatta allowed itself to be beaten by Sydney. It may be noted for correction in a future edition that the official record of the Royal College of Surgeons of England states that William Sherwin was admitted a Member on July 7, 1826, and received the Diploma of Fellow on May 5, 1862. It would be well, therefore, to look at his certificates if they are still available.

Practical Physiological Chemistry for Medical Students, by G. M. WISHART, D. P. CUTHBERTSON, and J. W CHAMBERS, is published by John Smith and Son (Glas.), Ltd., at 3s. 6d. It is a convenience to both students and teachers alike to have a book covering the ground of their own practical course. This small volume is specially designed for the students of the Glasgow Medical School. It follows conventional lines, is well arranged, and is better than most other works having similar aims in that it is simpler, and does not attempt to impose too heavy a burden on the beginner. On each full page one side is left free for the student's own notes. Fault might be found with some of the directions given in the practical exercises. For example, with no more guidance than appears in the book most students would fail with the osazone test for urinary sugars, unless these were present in considerable quantity. Further, the results of yeast fermentation can be achieved in about one-twentieth of the time allotted to this form of test. The simple means of detection of urobilinogen in fresh urine might also have been included. Despite these minor criticisms, the authors and publishers are to be congratulated on the production of an excellent book.

In his monograph *Les Fièvres Typho-exanthématiques en Égypte* (Alexandria, A. Procaccia, P.T.16) Dr. P. MODINOS, senior physician to the European Hospital at Alexandria, deals with the three types of typhus met with in Egypt—namely, historical, old-time, or epidemic typhus, murine typhus or Brill's disease, and Mediterranean exanthematic fever, otherwise known as boutonneuse fever. Illustrative cases of each type are recorded, with an account of the author's experimental work on guinea-pigs confirming the clinical diagnosis. A bibliography of 109 references is appended, in which, though some British authorities are quoted, we miss any mention of the valuable work of Dr. William Fletcher on tropical typhus.

The second edition of the *Introduction to Pathological Physiology*, by Professor MAX BÜRGER, director of the Bonn University Policlinic (Berlin, Julius Springer, RM. 24 paper, 25.80 bound), of which the first edition appeared in 1924 and was noticed in these columns, has been practically rewritten by incorporation of recent work on vitamins and hormones, nutrition, infection, immunity, and allergy.

Dr. R. GORDON COOKE has written a *Textbook of Chronic Diseases: A Handbook for Nurses* (Faber and Faber, 6s.), which contains much useful and helpful information. The book is supplementary to the lectures and the experience the nurse gains in her training school, when as a rule few chronic diseases in their terminal manifestations are seen. Dr. Cooke describes the advanced cancer case, chronic arthritis, and so on, and shows how much can be done to render suffering more bearable by wise and sympathetic nursing.

A NEW MEDICAL SCHOOL AT THE WEST LONDON HOSPITAL

OPPORTUNITIES FOR WOMEN STUDENTS

There are twelve hospitals in London with medical schools attached. Of these one only (the Royal Free) is run in connexion with the London School of Medicine for Women and admits women students alone. Of the remaining eleven schools nine are confined exclusively to men students. Two (University and King's College Hospitals) admit a small proportion of women students, derived mainly from the corresponding Colleges (King's and University) of the University of London. So far as men students are concerned the facilities in London may be considered adequate, though nearly all the schools have more applicants than they can place. There does not, however, appear to be any real evidence of serious overcrowding.

Women students who wish to study medicine in London are not so well off owing to their complete exclusion from nine of the twelve medical schools. The London School of Medicine for Women absorbs a large number of the applicants, but the total number of students exceeds that which is regarded as the optimum for a medical school —namely, one student to every three beds. University College accepts sixteen women students annually for pre-clinical studies, though only eight of these are subsequently admitted to the hospital. Of the remaining eight not more than two may gain places by competition, so there are at present at least six every year who have to go elsewhere for their clinical training. King's College does not admit more women for pre-clinical training than can ultimately be absorbed into King's College Hospital; it may be necessary, however, for some of them to wait for twelve or eighteen months after passing the Second M.B. Examination before they can be admitted to the hospital for clinical training.

A considerable number of women students who would otherwise do their whole medical training in London fail to obtain entry to any school and have to go to a provincial university, and it is not always easy for them to find places. It is still more difficult for those who have done the pre-clinical period in London to get admission to a provincial school for clinical training only. The position therefore appears to be that women are deterred from entering the profession and that London University is losing potential graduates to universities in the provinces. Moreover, it may occasionally happen that a student will complete half her course and find it impossible to proceed to the final subjects for lack of educational accommodation in London and through inability to find it in other cities.

The West London Hospital and Medical Education

Hitherto the West London Hospital has been exclusively a postgraduate school. The Post-Graduate College began just over forty years ago and was the first school of its kind in London. Shortly after the war the question of starting a central postgraduate medical school, financed from public funds and designed to attract medical men from all over the Empire and from foreign countries as well as from England, was discussed in Parliament and elsewhere. Having decided in favour of the principle the authorities were faced with the difficulty of finding a hospital suitable for their purpose. A number of the large voluntary hospitals were approached, but it was a condition that undergraduate teaching would have to be given up if they undertook the postgraduate work for the new school. For this reason the hospitals with existing medical schools refused to consider the proposal. The West London was next approached and, although it was a much smaller hospital than was required, its site of three and a half acres (the freehold of which is held by the hospital) made possible the necessary extensions and enlargements. After some consideration the hospital accepted the offer, and plans were drawn up for a complete reconstruction of the present buildings and for development of those parts of the site which were not occupied for hospital purposes.

These negotiations went on for a number of years and necessarily held up the various schemes for development which the board of the hospital had had in mind. It was obviously useless to spend money on improvements until the complete reconstruction scheme for the new School should start. Meanwhile the Act of 1930, transferring the old Poor Law infirmaries to the control of the county councils, became law. The fact that an undertaking had been given to the West London Hospital (it had been announced in Parliament) that the new School was to be established at the hospital was of no avail. Those in control of the scheme saw the opportunity of acquiring a reorganized municipal hospital for their purpose, and the West London board was informed that it had now been decided to establish the new School elsewhere.

This was a great blow to the West London. Through all the prosperous years after the war, when money was comparatively easy to come by, these negotiations had been going on. Although it was in urgent need of improvements and extensions no appeal was made in view of the imminent reconstruction of the hospital for its new function. Along with the passing of the new Act came the financial crisis. The time for an appeal was unpropitious, yet the need had increased by the defects which had accumulated in the years of waiting. Nevertheless the board went ahead with schemes for improvement and rebuilding.

The Governing Body of the British Postgraduate Medical School decided to establish its school at the Hammersmith (L.C.C.) Hospital, in the same borough as the West London. In 1934 it opened its doors to students. At this time those in control of the West London Post-Graduate College were greatly concerned as to the future of the West London, with the new Postgraduate School supported by public funds competing with it almost on its doorstep. It seemed likely that, in the long run, the West London would have to give way to its powerful competitor.

The staff of the West London were well aware of the many advantages of a hospital having some sort of teaching institution attached to it and were loath to see their forty years of work for medical education wiped out. Alternatives to postgraduate teaching were examined, and the question of becoming an undergraduate school was for the first time seriously considered. The obvious need for further clinical facilities for women students was thought to offer a possible solution.

Negotiations with London University

Late in June, 1934, the University of London was approached with the suggestion that the West London should become a School of the University for women medical students. The authorities were clearly interested in the proposition, and the next step was to get the consent and co-operation of the board of the hospital. This was willingly given at its July meeting. In the following October the University sent a deputation to the hospital to inspect the facilities. They expressed themselves as satisfied except for the pathological department, which was then housed in sheds (the needed increase in accommodation having been held up for the reasons already stated). It was pointed out that plans for a new building which included new pathological laboratories had been prepared and that building was about to start. The new laboratories would be planned with a view to teaching, and should be capable of accommodating all the students who were likely to be admitted.

The main difficulty London University had to face was the supply of students. It did not seem feasible to establish schools for anatomy and physiology at the

West London; such a project would have been too expensive for the relatively small number of students concerned. On the other hand, the number of students who passed their Second M.B. in London and were unable to find accommodation for clinical study was not great. There were the six to eight students from University College who annually failed to get places in University College Hospital. There might also be a very few from other sources, but it did not seem likely that a full entry (twenty-five students a year) could be obtained unless accommodation for more students to do anatomy and physiology was found either in existing departments or by the formation of a new one.

This matter is still having the attention of a special committee of the Court of the University. Early this year, however, the West London had a number of applications from women students at University College who were approaching their Second M.B. Examination in March without any certainty of getting places in the hospital. They had heard of the developments at the West London, and wanted to know whether they could do their clinical studies there if they failed to get into University College Hospital. They were told that it entirely depended on whether London University would recognize the hospital for the purpose, and it was promised that the matter should be at once taken up with the University. The University, however, had no powers to grant to a hospital *ad hoc* recognition for individual students. A solution of the difficulty was found by the Council for External Students, which proposed to the Senate at its July meeting that the West London should be recognized "as an institution approved for the purposes of the M.B., B.S. degree for external students (clinical work only)." This was passed by the Senate, but any resolution involving recognition of a medical school requires (by the Statutes of the University) the approval of His Majesty in Council. As no Privy Council meeting was to be held until October the recognition could not become official before the beginning of the academic year.

In the meantime the applicants from University College had grown weary of delays, and most of them had succeeded in getting places in provincial medical schools. Three students, however, had failed to gain entry into any medical school or for various reasons could not pursue their studies away from London. These were accepted by the West London subject to the approval of the Privy Council being forthcoming, and actually started work on October 1 this year. In addition one other student who had had to go to Leeds for clinical work and who had done about a year at that university was also accepted, and started work on the same date. In due course the approval of the Privy Council was obtained and the position was thus regularized.

The West London and the Future

The present arrangement with the University of London is regarded as only a temporary one. It is expected that in due course full recognition as an internal school of the University will be granted. This will take place when the committee of the Court that is exploring the ground as to the teaching of anatomy has found a solution of the problem, which has already been mentioned.

The University of London is not, however, the only examining body with which London students are concerned. Most of the men and women from Oxford and Cambridge prefer to do their clinical work in London, and recognition by these two universities has just been granted. Application has also been made to the Committee of Management of the Conjoint Board of the Royal Colleges as well as to the Society of Apothecaries, and it is assumed that these bodies will follow the lead of the universities.

The recognition from the Universities and Colleges has, of course, no reference to the sex of the students. So far as they are concerned both men and women may study at the West London. Nevertheless the new venture has been designed specially for the benefit of women students, and it is to be anticipated that the majority of students seeking admission will be women. There is no present intention of confining the school to women students, and men applicants will be considered on their merits. It is well known that women prefer to have their medical education with men, but that the men prefer isolation. The experiment of admitting women was tried after the war by a number of medical schools in London and was abandoned in all except the two already mentioned, which have ties with the corresponding Colleges of the University. The future development of the West London School in this respect cannot be foreseen, but it would seem only reasonable not to bar the way to a metropolitan medical school which would accept men and women without discrimination.

It is not possible to teach graduates and undergraduates in any numbers in the same hospital. For this reason the ultimate policy of the West London is to give up its postgraduate work; but there is no intention of doing this immediately. The Post-Graduate College is handling more students at the present time than it has ever done, and the need for such work is becoming increasingly apparent. Until the future of the undergraduate school is assured and a full entry obtained the two types of teaching will have to go on together, though every effort will be made not to let them interfere with each other.

It must be obvious that the West London cannot yet offer the facilities that the older teaching hospitals possess. The Post-Graduate College has quarters in the main hospital building, and these are being used for the time being. Sooner or later new medical school buildings will be needed, and there is ample space for these on the hospital property. The financing of such an extension may present difficulties, but it is hoped that public-spirited people interested in the future of the medical education of women may be persuaded to provide the necessary funds.

Clinical Facilities

The clinical facilities are excellent. The out-patient department already deals with a larger number of patients than several of the existing medical schools, and there are 239 beds for in-patients. Allowing for the optimum number of students—the figures already mentioned, namely, one to every three beds—the School should be able to provide accommodation for between seventy and eighty students. The entry for any year, therefore, should not exceed thirty, and would normally be about twenty-five; this is taking into consideration that the clinical period now occupies three years and that a certain amount of wastage must be expected—more so with women than with men. It is hoped that this number will be made up from students from the three Universities of Oxford, Cambridge, and London, the last-named contributing the larger proportion.

There is no maternity department at the hospital; arrangements are therefore being made for this part of the training to be carried out in co-operation with an adjacent county council.

It is recognized that a medical school must offer the usual house appointments to its students, and these will be available as soon as suitable students become applicants. Moreover, the question of considering women for staff appointments has been discussed, and it has been agreed that this will have to be done in due course. There is nothing in the regulations of the West London Hospital to exclude women from either house or staff appointments.

The King has granted Dr. Austin William Byrne authority to wear the Order of the Nile, Insignia of Commander, conferred upon him by the King of Egypt in recognition of valuable services rendered by him in the employment of the Egyptian Government.

Nova et Vetera

BARON ALIBERT

At a meeting of the Section of Dermatology of the Royal Society of Medicine on November 18 Dr. J. D. ROLLESTON read a paper on the life and work of Baron Alibert on the occasion of the centenary of his death.

Alibert was born on May 26, 1768, and studied medicine in Paris, where he qualified in 1799 with a thesis on pernicious fevers, of which several editions were published. His rise in the profession was remarkably rapid, as two years after qualification he was made assistant physician and in the following year full physician to the Hôpital Saint-Louis. In addition to several books on diseases of the skin, of which the most important was published in parts between 1806 and 1814, and in which coloured plates appeared for the first time in the history of dermatology, he was the author of a work on therapeutics, of which he was the first professor in the Paris Faculty, and won the Montyon prize for a work on the physiology of the passions, which was translated into German and Spanish. He was physician to Louis XVIII and Charles X, who created him a baron. His death, due to cancer of the stomach, took place on November 4, 1837.

Dr. Rolleston attributed Alibert's high rank in the history of French medicine generally and of dermatology in particular to the following circumstances among others. In the first place he established the first independent clinic for dermatology in France. Secondly, he described several new diseases, including mycosis fungoides, Aleppo boil, keloid, and acromegaly, and invented new terms—namely, syphilides, dermatosis, and dermatolysis, as well as many others which have not survived. Thirdly, though not to be compared with Trousseau, his successor in the chair of therapeutics, he was by no means a therapeutic nihilist. His textbook on his subject had no rival for over thirty years, and its merits were recognized by several of his successors in the same chair. Lastly, he made the Hôpital Saint-Louis the Mecca of dermatologists throughout the world.

JOHN GRAHAM, APOTHECARY OF CARLISLE

On Thursday, November 14, 1745, John Graham, apothecary of Carlisle, stepped into history. The story is told by Dr. Waugh, Chancellor of the Diocese of Carlisle, who is quoted by G. J. Mounsey in his *Account of the Occupation of Carlisle* in 1745.

"Some time after we were in the Castle, towards evening, the Mayor came to demand the Keys of the Town, as Col: [Durand] had retired into the Castle; and John Davinson, merchant, John Graham, apothecary, and Doctor Douglass, a physician, were sent out [to Prince Charles Edward's camp] as I apprehended, the two former at the request of the Mayor and inhabitants, and the last at the request of the Militia Officers, he being a volunteer in Sir J. Pennington's Company.

"About ten o'clock the messengers returned and said that the flags had been sent to the Pretender's Son at Brampton, and that the answer was that he would grant no terms to the Town, nor treat about it at all unless the Castle was surrendered."

This apothecary probably had the remarkable experience of seeing and speaking to such notable characters as the Young Pretender, Mr. "Evidence" Murray, and Lord George Murray.

There is in the collection of Dr. T. Hare a pressed horn snuffbox of eighteenth century workmanship, bearing the name of Graham, apothecary, Carlisle, and the arms of the Lumber Troop (a society with members in London and the provinces).

Graham died on June 25, 1757, at the age of 49, and was buried in St. Cuthbert's Church, Carlisle.

W. BRYCE MCKELVIE.

BIBLIOGRAPHICAL REFERENCES

A NOTE FOR CONTRIBUTORS TO THE B.M.J.

Starting with the issue of January 2, 1937, the *British Medical Journal* adopted the Harvard system of giving references to scientific literature, and used the abbreviations of names of scientific periodicals which are included in the *World List*. This system, which has been slightly modified, is as follows:

References in the Text

1. Numbered references in the text are not used, although with an exceptionally long list of references this rule might be relaxed.

2. Instead of a "superior numeral" the author's name and the date of the publication are given in brackets.

EXAMPLE A

Old style = It has been said[1] that coma in heart disease is rare.

Harvard system = It has been said (Jones, 1935) that coma in heart disease is rare.

EXAMPLE B

Old style = Dale and Dudley[2] isolated acetylcholine from animal tissues.

Harvard system = Dale and Dudley (1929) isolated acetylcholine from animal tissues.

In other words, when the author's name is part of the sentence only the year of the publication referred to is to be in brackets. When more than one paper by the same author is published in any one year each paper should be distinguished by a small letter—a, b, etc.—placed after the date—for example, (Brown, 1935a).

References at End of Paper

1. These references are not numbered, with the possible exception of a long list of references.

2. Authors' names are arranged in alphabetical order.

3. The year of publication is given in brackets after the author's name.

4. The title of the periodical is printed in italics and abbreviated in accordance with the *World List of Scientific Periodicals*.

5. The volume number is printed in Arabic numerals in bold-face type; this is followed by the first page number of the paper quoted.

6. When the title of a book is referred to, the name of the publisher, the place of publication, and the number and date of the edition should be given when possible.

7. When an author's name is repeated in the list of references a short line represents the repeated name.

EXAMPLE

"In contrast to these results O'Brien (1932) and Yudkin (1933) report that cataracts only occur in rats deprived of vitamin B_2 at an early age and not in older animals, while in this country Bourne and Pyke (1935) carefully repeated the work of Day and Langston (1933) and obtained an incidence of cataract of only 31 per cent. . . . Bourne and Young (1934) have made a discovery of great importance in showing . . ."

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THE MILK PROBLEM

In view of the forthcoming Milk Bill, in which a measure of compulsory pasteurization is promised, a report just issued by the Health Organization of the League of Nations entitled "The Milk Problem"[1] is of unusual interest. It was compiled by a number of experts drawn from the agricultural, nutritional, medical, veterinary, economic, and social fields after a tour of inspection in Great Britain, Scandinavia, the Netherlands, and Switzerland. The essence of the report, around which most of the individual sections are built, is the opinion, unanimously expressed, that attempts to increase the consumption of milk must depend for their success on public confidence in the purity of the milk supply. The methods, therefore, of furnishing the public with milk of high nutritive quality, produced under hygienic conditions from healthy cows, rendered safe by adequate pasteurization, distributed by efficient and scientifically organized firms, and sold at the minimum possible price, constitute the problem which the authors set out to solve. In all the countries visited, with the exception of Norway, it was found that bovine tuberculosis is extremely prevalent, and that contagious abortion and mastitis are widespread. Our knowledge of the incidence of milk-borne disease in man is at present very defective, and it may confidently be assumed that the figures we do possess underestimate—sometimes grossly—its real frequency. Nevertheless, it is pointed out in the report that in Great Britain during the twenty-four years 1912–35 there were over a hundred outbreaks of epidemic milk-borne disease, affecting about 12,000 persons. During the same time about 150,000 persons contracted tuberculosis of bovine origin through the consumption of milk, and over 60,000 of them died, while an unascertained number, probably several thousand, suffered from undulant fever due to infection with *Br. abortus*. In Denmark during the three years 1934–6 there were at least nine outbreaks of epidemic milk-borne disease, apart from tuberculosis and undulant fever, involving over 10,000 persons.

[1] H. C. Bendixen, G. J. Blink, J. C. Drummond, A. M. Leroy, and G. S. Wilson. *Bull. Hlth. Org. L. o. N.*, 1937, **6**, 371–504.

Three main lines of approach towards the provision of a safe milk supply are discussed in the report—namely, the control of animal disease, the control of the human personnel, and the destruction of pathogenic organisms in the milk by pasteurization or by other form of heat treatment. Consideration is given to the various means of controlling animal disease, and the conclusion is reached that, whenever possible, the eradication method should be used. The principle of this method consists in the detection and elimination of all infected animals—not merely of those that are obviously diseased—and the building-up of a healthy herd from the young non-infected stock. Any campaign to eradicate animal disease should be carried out with State aid in the economic interests of the farmer, on the assumption that a healthy herd is more profitable than a diseased herd. Bonus payments to the producer of milk from disease-free herds afford an excellent stimulus to the farmer, but on no account—and this point is strongly emphasized—should the conduct of the campaign be made contingent on the payment by the consumer of a higher price for milk from such herds. The amount of animal disease is so extensive, and the difficulties of combating it are so great, that its control, however desirable on economic grounds, cannot be regarded as affording an immediate solution to the public health problem of protecting the consumer against the risk of milk-borne disease. Medical inspection of the personnel is considered to be too expensive and inefficient to be justifiable, except in certain circumstances, and in these it is highly recommended. When, for instance, the milk is to be drunk raw, medical and bacteriological control of all persons handling it in the course of its production and distribution should be insisted upon. A similar control should likewise be exercised over all human operatives in pasteurization or other plants in which large volumes of mixed milk are being handled, so as to prevent any possible danger of contamination of the milk after processing. This is an extremely important requirement that has so far been largely neglected. Even if produced from healthy animals, milk is so liable to contamination from human and other sources that the only satisfactory method of ensuring its final safety when delivered to the consumer is to submit it to some form of heat treatment that can be relied on to destroy any pathogenic organisms which may be present.

"*It is our considered and emphatic opinion that all liquid milk for human consumption should be adequately pasteurized or boiled.*" This conclusion, which is expressed in italics, will undoubtedly command the support of educated medical opinion

in this country. The various types of pasteurization are defined and rigid conditions are laid down governing the whole process. Far too little control is at present being exercised over pasteurization by the medical and sanitary authorities. If pasteurization is to be recommended as the chief measure for protecting the public from milk-borne disease, then no effort must be spared to ensure that the whole process is carried out efficiently and that subsequent contamination of the milk is avoided. Ten pages of the report are devoted to discussing the more important arguments for and against pasteurization. Though many pseudo-scientific objections have been advanced against it, the authors have been unable to find any that are supported by adequate evidence. On the other hand, there is a considerable amount of evidence to show that when pasteurization has been introduced on a large scale milk-borne disease has been practically abolished. There is a very interesting discussion, to which only a brief reference can be made, on the principles of milk grading. The main conclusion is that the milk of *producers* should be graded and paid for on the basis of quality—fat content, cleanliness, and freedom of the herd from disease—but that milk for the *consumer* should not be graded. Without an adequate financial stimulus the producer cannot be expected to take the extra trouble and incur the additional expense required for building up a healthy herd and for producing clean milk. Quality payment, however, should not be passed on to the consumer. He should be provided with one quality of milk only, or at the most with one quality of raw and one of pasteurized. Multiple grades merely confuse the public and have very little effect on raising the general level of the milk supply.

Finally the authors discuss something of the economics of milk distribution. A few decades ago the distribution of milk was a primitive business, carried out by the farmer himself or by a simple intermediary. With the rapid growth in many countries of an industrial population the need for milk in the towns has increased considerably, while at the same time the farms producing the milk have been pushed further and further away from the centre of consumption. To meet this situation a milk-distributing trade has grown up. The term "distributing trade" is really a misnomer. The distributor is no longer a mere link between the producer and the consumer; he now constitutes an essential part of the structure of the dairy industry. It is he who is responsible for the collection of the milk, its cooling, transportation, filtration, pasteurization, bottling, refrigeration, and final delivery to the actual house of the consumer. In addition, he is often faced with the problem of dealing with surplus milk, and is therefore constrained to build factories to turn it into butter, cheese, condensed milk, dried milk, and so on. All these articles have to be marketed at home or abroad, and a complex business organization has therefore to be built up. Such an agency can pasteurize, bottle, and distribute milk of a high standard of cleanliness and safety at a cost only slightly in excess of that demanded by the smaller producer who sells his own milk unbottled and in a potentially dangerous condition. The conclusions to be drawn from this may be stated in the words of the authors.

"We believe that the future of the dairy industry lies in the gradual elimination of the small and often inefficient distributor, and its concentration into the hands of large, well-organized firms which are making use of every aid that science can offer them to improve the technical efficiency of their business and the high quality of their products. Just as, during the past century, the water supply of our large towns has passed out of the hands of multiple small producer-retailers into the hands of large concerns, controlled by the municipality, a public utility company, or some similar body, so, in the future, we believe that milk for human consumption in the liquid state will come to be regarded more and more as an article of food over which such care has to be exercised that none but large and efficient organizations will be allowed to handle it."

This is a bold prophecy, and one which, provided adequate governmental restraint is exercised over the quality and selling price of the milk, the public health authorities of this country may well wish to see fulfilled.

IMMUNIZATION AGAINST TYPHOID

The Croydon outbreak of typhoid fever has again raised a question which it is important finally to settle: What measures can be taken to protect individuals perhaps already exposed to infection? Until recently the only available immunizing agent has been vaccine, and this has sometimes been withheld on the supposition, based on the conception of the "negative phase," that the administration of vaccine will for the time being lower resistance instead of increasing it, an effect which might be disastrous during the incubation period. An examination of actual evidence lends no support to this purely theoretical objection: on the contrary, there are good reasons for believing that vaccine is strongly indicated under these conditions. Perhaps the most extensive and careful study bearing on this point is that of Ramsey,[1] who gave vaccine to 2,402 household contacts, of whom only nine subsequently developed typhoid fever, while among 2,886 unvaccinated contacts no fewer than 203 did so. On a similar scale was

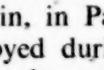
[1] *Amer. J. Hyg.*, 1935, **21**, 665.

the successful effort reported recently in this journal by R. Taylor[2] to combat typhoid fever in the Basque refugee children's camp in this country: five cases of typhoid fever occurred under conditions in which infection might have been expected to spread readily, but after vaccination of the remaining 4,000 children no further cases occurred. A fact of significance is that neither in these nor, as far as we are aware, in any other studies is there to be found a record of cases in which vaccination was followed by an exceptionally severe attack of the disease, such as might well occur if the process can be positively harmful. It is perhaps relevant to this question that the advocates of vaccine for whooping-cough are convinced of its capacity to prevent, or at least to modify, the disease when given after exposure to infection: here the longer incubation period is perhaps more favourable to such attempts. These and other facts seem to point to the advisability of active immunization in circumstances such as have recently existed in Croydon. It is highly desirable that official opinion on this question should be made clear, in order that appropriate action need not be delayed by doubts and questionings.

A somewhat different problem is the scope of usefulness of anti-typhoid serum. Studies by Felix of the different antigens of the typhoid bacillus have led to the production of a therapeutic serum, now obtainable from the Lister Institute, which is of unquestionable efficacy in experimental infection in mice. Clinical trials of this serum have been conducted in Dublin, in Palestine, and in China: it was also employed during the Bournemouth epidemic last year, the results being reported by H. Cookson and R. V. Facey[3] in this journal. A further report by C. J. McSweeney on the effects of its use in Dublin will be found on page 1118. From the statistical point of view the results obtained are necessarily inconclusive, chiefly because the treatment has been reserved for more severe cases, but the authors of published reports are all agreed on its usefulness. It is reported in the daily press that this serum has been given to contacts of cases which occurred in Kensington. This is a new departure, and if a clinical experiment were feasible under conditions which would furnish conclusive evidence of its value the results would be of great interest. For those who prefer not to rely entirely on a comparatively untried method of purely passive immunization a third alternative exists in the simultaneous administration of serum and vaccine, a type of proceeding for which there is ample precedent in other connexions.

[2] *British Medical Journal*, 1937, **2**, 760.
[3] Ibid., 1937, **1**, 1009.

POISONING BY ELIXIR SULFANILAMIDE

A recent outbreak of poisoning in the U.S.A. has demonstrated in a sensational and tragic manner the unexpected dangers that may attend the introduction into therapeutic use of chemical compounds without an adequate preliminary trial of their possible toxic actions. A full account of the matter is given in the *Journal of the American Medical Association* of November 6. An American firm found that sulphonamide was soluble in diethylene glycol, a synthetic product somewhat resembling glycerol in its physical properties. An elixir containing 10 per cent. sulphonamide and 72 per cent. diethylene glycol was made up, and administration was recommended in doses of two to three teaspoonfuls every four hours for one or two days. On October 11 six deaths were reported from anuria following the use of this remedy. The danger was promptly reported in the medical journals and the U.S. Food and Drug Administration worked energetically to stop further consumption of the elixir. This involved tracing no fewer than 700 shipments. The number of deaths, however, has since risen to 60. Investigations in the laboratories of the American Medical Association have shown that the lethal action of the elixir was due to the diethylene glycol rather than to the sulphonamide. In dogs and rats a dose of about 13 c.cm. of diethylene glycol per kilogramme produced death from injury to the kidney and liver, and similar effects were caused by the elixir in corresponding doses. Before this accident comparatively little was known of the toxic actions produced by diethylene glycol $[(CH_2OH.CH_2)_2O]$, but the toxicity of ethylene glycol $(CH_2OH)_2$ and of dioxan or diethylene dioxide  had been studied by many authors. In a recent summary of this work Browning[1] states that the two last-mentioned substances injure the kidney and the liver. Experiments on small animals indicate that the relative toxicity in descending order is ethylene glycol, diethylene glycol, and dioxan. The last substance caused, however, some serious industrial poisoning in 1933. It is, therefore, scarcely true to say that nothing was known previously about the toxicity of diethylene glycol, since much attention had been paid to the possible toxic actions of various related compounds, and enough had been discovered to warrant caution in therapeutic administration. The full dose of elixir sulfanilamide recommended by the vendors (three teaspoonfuls every four hours) would provide about 50 c.cm. of diethylene glycol in a day. This is much less than the lethal doses found for animals, and the American investigators suggest that sulphonamide and diethylene glycol may produce additive toxic actions when given in combination. Further research into these toxic actions is required, but enough was already known to make such a tragedy that has occurred wholly inexcusable. Sulphonamide is a powerful drug and potentially toxic. Diethylene glycol belongs to a group of drugs of which certain members have given rise

[1] *Toxicity of Industrial Organic Solvents*. Medical Research Council. Industrial Health Research Board. 1937. Report No. 80.

to dangerous toxic effects. Yet hundreds of shipments of a mixture of the two were sent all over the U.S.A. without any preliminary attempt to determine its safety. As the leading article in the *Journal of the American Medical Association* states: "Surely there has been no blacker picture of the inadequacy of our present food and drug laws or the lack of common scientific decency in drug manufacture than that illustrated by this tragic disaster."

THE DOCTOR'S HEART

Articles on the diseases of their profession have a certain fascination for medical readers, particularly if they are well documented with statistical tables. Attention may therefore be drawn to a brief but valuable paper by A. Morris Ginsberg of Kansas City in the October issue of the *Journal of the Missouri State Medical Association*, entitled "The Doctor's Heart." Heart disease is described as the leading cause of death among physicians practising in the United States of America. Its incidence (40 per cent. of all deaths) is almost double that found in the general population (23.85 per cent.). Cerebral haemorrhage, pneumonia, and arteriosclerosis take second place. Among members of the Jackson County Medical Society (1932–6) heart disease was the cause of 36.2 per cent. of all deaths. Of twenty-one heart deaths eight were due to coronary occlusion, six to coronary sclerosis, five to chronic myocarditis, and two to rheumatic heart disease. Of further interest is a questionary submitted to members of this society. Out of 594 practitioners—average age, 49.94 years—232 sought medical advice in the last two years, and of these eighty-three have some heart disturbance, which in 74.69 per cent. was degenerative in type. Finally a survey of 279 pre-medical students at the University of Kansas for 1935 and 1936 shows that six are affected with rheumatic heart disease, an incidence of 2.1 per cent., which is comparable to the estimated percentage in the general population.

CEREBROSPINAL RHINORRHOEA

The discharge of cerebrospinal fluid from the nose, sometimes in large quantities, is a peculiar phenomenon fraught with an ever-possible danger—of which, generally speaking, the patient is mercifully oblivious—in the form of intracranial infection. The escape of fluid may follow fractures of the base of the skull, complicate operations on the nasal sinuses, or be of the apparently spontaneous variety, to which contributory factors may be a congenital deficiency in the cribriform plate of the ethmoid or a slowly growing cranial or intracranial tumour. At a recent discussion on injuries of the frontal and ethmoidal sinuses, with special reference to cerebrospinal rhinorrhoea and aeroceles, at the Royal Society of Medicine,[1] opened by Professor Hugh Cairns, Sir StClair Thomson, who thirty years ago differentiated between traumatic and "spontaneous" cases of cerebrospinal rhinorrhoea, pointed out that the purely spontaneous variety must be distinguished from that associated with conditions like meningocele, which was not strictly spontaneous. He did not think that the spontaneous form could be traced to any congenital defect, because it occurred mostly in adults: it generally developed without any history of accident or of predisposing disease, and *x*-ray examination was of no assistance. In the absence of gross defects the leakage probably took place along the sheaths of the olfactory nerves. The occasional association with aeroceles in traumatic cases is an interesting one. The air enters the cranial cavity through a fracture, often in the orbital plate, and usually is forced in by the patient blowing his nose, an act from which he should be restrained but which he is likely to perform because of the discomfort arising from the collection of blood clot in the nose. In fractures of the frontal sinus and cribriform plate there is a risk of intracranial infection not only immediately after the accident but also at a later period, when a catarrhal infection of the nasal passages may break through barriers weakened by the injury. The infection usually produces purulent leptomeningitis, but sometimes a cerebral abscess or purulent ependymitis may result. This risk of infection may be reduced by operative closure of the rent in the dura mater, which is usually found in the region of the cribriform plate. It is best dealt with either by suturing or by the application of a muscle or fascial graft. The operation is indicated in cases of delayed and persistent cerebrospinal rhinorrhoea following head injury.

[1] *J. Laryng.*, 1937, **52**, 589.

THE NATURE OF VIRUSES

There must still be many who are yet unaware that doubt is now being cast on the living nature of at least some of the filterable viruses. These numerous agents of disease differ from bacteria in many ways, but chiefly in their size, which in some cases is so small that it approaches that of some of the most complex single molecules, and in the fact that they are incapable of multiplication except in a living host. Speculative doubt of their living nature has been expressed more than once before, and scraps of actual evidence connected with their properties have seemed to support it, but a more formidable campaign aiming at proof that certain viruses at least are non-living dates from Stanley's assertion of two years ago that the virus of tobacco mosaic disease can be crystallized. Subsequent investigation has made this observation appear in itself less dramatic and conclusive, but tends to confirm the conclusion based on it that the virus of this disease cannot be a living micro-organism. The active agent appears to be a characteristic protein, found only in infected plants and produced in them in great abundance. At a meeting of the Section of Comparative Medicine of the Royal Society of Medicine on November 24 these discoveries were described by J. Henderson Smith and F. C. Bawden from the point of view of the plant microbiologist, and by J. D. Bernal from the point of view of the physicist, whose task it has been to study the structure of the particles in virus suspensions by methods such as that of *x*-ray spectro-

graphy. Almost all work on animal viruses proceeds on the assumption that they are living micro-organisms, a view which those responsible for this work are exceedingly reluctant to question, and the arguments in its favour were expressed at this meeting by C. H. Andrewes, who described the few attempts which have hitherto been made to identify the active agent in animal viruses with a protein, and submitted that they are of little significance. In his view the powers of adaptation exhibited by viruses, their capacity for multiplication in unaffected insect vectors as well as in the infected animal, and the resistance evoked by infection are facts consistent only with the belief that viruses are living things. It would be idle to speculate on the future course of this controversy, or to suggest that it may lead to the revelation of some hitherto unsuspected form of life, perhaps best to be described by the old term *contagium vivum fluidum*, but it may be pointed out that viruses vary considerably in particle size, and some of the larger ones can be photographed and have all the appearances of miniature bacteria. Short of assuming that viruses are of two different kinds, living and non-living—a proposition which their generally similar behaviour does not support—the two points of view here expressed are quite irreconcilable. The advent of the ultra-centrifuge, which will precipitate not only very small particles in the ordinary sense but even some of the larger molecules, and the impact of other physical and physicochemical methods on the biological sciences are likely to have further interesting and perhaps startling results.

TENDON SUTURE

Kanavel, whose work based upon anatomical researches has done so much to improve the surgery of the hand, has remarked that he would rather have the average surgeon operate upon him for appendicitis than for a severed flexor tendon,[1] an opinion with which many will concur. There can be no doubt that there is a great deal of disability due to the bad results following tendon suture performed by those inexperienced in this branch of surgery, and it is a matter for comment that much of this surgery is carried out in casualty departments by relatively junior members of hospital staffs. In the course of a discussion on infections of the hand, at the Annual Meeting of the British Medical Association at Bournemouth in 1934, it was pointed out that patients with infection of the hand do much better if admitted to hospital and kept in bed than if treated as out-patients in the casualty department. The same may be said to apply to many cases of injury, and especially to those in which tendons or nerves have been divided and require repair. In a recent paper on severed tendons and nerves M. C. O'Shea[2] of New York advocates primary repair of severed tendons as soon after the injury as possible, fine black silk being used in the form of simple mattress sutures, with additional interrupted peripheral stitches. When both digital flexor tendons are divided in the finger he believes that only one, the deep flexor, should be repaired, and that one slip of the splitting insertion of the superficial flexor tendon should be used to form a new annular (vaginal) ligament by passing it over the profundus tendon and sewing it to the lateral expansion of the digital extensor tendon. If both divided tendons are repaired at the same time there is a tendency for them to adhere to their surrounds in a mass of scar tissue. Repaired wounds should not be drained, because if drainage is necessary primary tendon repair is not advisable. The post-operative treatment of these injuries is so important that it is in this period particularly that the patient should be in hospital whenever possible. The gradual replacement of splints applied to relieve tension on the suture lines by others in which there is a gradual "taking up" of the tendon, and the institution and control of movements, can only be carried out to the best advantage with the patient in hospital under constant supervision. At first sight such treatment may appear to be economically impossible, but the loss to the individual and the community by impaired function of the hand must be weighed against this. Much disability is caused by the bad results of treatment of injuries of the hand. There is no doubt that this could be diminished if patients with severed tendons were admitted to hospital wards and treated by the more experienced members of the surgical staff.

[1] *J. Amer. med. Ass.*, 1936, **107**, 1044.
[2] *Ann. Surg.*, 1937, **105**, 228.

SURGEONS AT LEISURE

In the past few years the general public has become accustomed to the publication of novels and the production of plays by doctors. The interest of the public in these literary works has been aroused mainly because they portray some phase or another of a doctor's life or his place in the social and even economic structure. The exhibition of pictures and sculpture by Fellows and Members of the Royal College of Surgeons of England which has just closed is of interest because, except for two exhibits, it is impossible to diagnose from the works on show the occupation of the artists. The pictures incline more to the academic than the surrealist technique; while the sculptures, by their anatomical accuracy and finish, are either classical Greek in inspiration or show the influence of Rodin by the skilful grouping of the figures and their "liveness." The exhibition is, therefore, the work of doctors and not an artistic rendering of doctors' work. The outstanding pictures were two oils by the late Professor Tonks. One painted during the war shows an underground casualty clearing station near Arras; the other commemorates an incident during the Archangel adventure in 1919. The former, by its dull tones and lighting, captures the atmosphere of peace and quiet after the attack is over. It is not "surgical" in detail though a surgical subject. It is a picture and not a mere record of the work of doctors. In the second picture, the grouping and movement of the figures, the almost theatrical composition and colouring, and the atmosphere of relief and joy make it one of his great pictures. Tonks was, chronologically, a surgeon

before he was an artist, in the same way as Keats was a dresser at Guy's before he became known as a poet. An attempt to classify the exhibits and to find in them signs of the specialties indulged in by the artists failed. The technique of the ophthalmologist is no more meticulous in detail than that of the pathologist. Anatomical training does not prevent anatomical errors in figure drawing. More striking than these failures to correlate occupation and technique is the ease with which one can pick out the ardent angler, the mountaineer, and the favourite holiday resorts of the exhibitor. Landscapes show every country from Iceland to Morocco, but with a predominance in favour of the English countryside. Every phase of English weather is represented. From another point of view the exhibition is of interest. The artists are realists. There are no allegorical subjects, no striving after subtle portraiture, nothing Brangwynesque, and only a suggestion here and there of the influence of the modern poster technique. It is a "quiet" exhibition, a "leisure" exhibition, and for these reasons, if one may be technical, it is essentially a release phenomenon, a release from the cares and worries of patient, hospital, and teaching.

SKIN TROUBLES IN PREGNANCY

Dr. Henri Vignes, in collaboration with other French writers, is producing a series of monographs on the diseases to which pregnant women are liable. The first volume was concerned with the alimentary canal, and the second with the liver, pancreas, nutritional disorders, and abdominal wall. The one now before us deals with diseases of the skin.[1] Dr. Vignes maintains that there is a fundamental distinction to be drawn between the general physiology of the pregnant woman and the metabolic life of those who are free from this complication, which depends very little upon the mechanical influence of the enlarging uterus, but much more upon the continual tax which the foetus levies on the mother in the course of its development—a tax which acts as a very powerful stimulus to all her organs and glands—and also upon the functions of the placenta, which is to be regarded as a temporary source of endocrines. There are two obvious departments in this field of work: (1) the discussion of such maladies as are peculiar to pregnancy; and (2) the influence of pregnancy on the course and therapeutics of such pathological conditions which, though not peculiar to pregnancy, may arise during that period. In the domain of diseases peculiar to pregnancy dermatology plays a very small part. In a series of 22,000 accouchements collected by Perondi, only 63 cases of non-venereal skin disease were mentioned. These, however, were all affections of considerable severity. Among the dermatoses observed in pregnancy some run their habitual course, a few become less severe, but a greater number are aggravated by the condition. Dr. Vignes, with the help of Drs. Hanoun and Vial, has written an interesting account of the cutaneous complications of pregnancy. It appears that during gestation the physiological activities of the skin, like those of other organs, are stimulated. The proliferation of the cutaneous cells is more active and both the hair and the nails grow more quickly. The sweat glands are more active. All these factors naturally modify the course of such commonplace skin diseases as eczema, psoriasis, etc., which may supervene during the period. One interesting point is that the scalp, if affected by seborrhoea, improves and the hair stops falling; the nails also grow more quickly. We also note that Dr. Vignes does not believe that there is such a thing as an auto-intoxication of pregnancy, though he speaks of a "trouble humoral"—in other words, of a disturbance of the body fluids—and he regards this disturbance as the real cause of the dermatoses of pregnancy.

[1] *Maladies des Femmes Enceintes.* III. *Affections de la Peau.* By Henry Vignes. Paris: Masson et Cie. (28 fr.)

BLOOD-ALCOHOL DETERMINATIONS

A recent monograph by Dr. H. Elbel[1] gives a short but clear account of the methods used in blood-alcohol determination and of the evidence regarding the relation between blood-alcohol content, alcohol consumption, and intoxication. These problems are of great medico-legal importance, because in Sweden, Germany, and other Continental countries blood-alcohol determinations are used as a routine in cases where motor drivers are accused of intoxication. The discussion of the possible errors shows the need for scrupulous care in the carrying out of this delicate micromethod. For example, the use of an alcoholic solution for disinfection of the skin when taking blood may produce a huge error. An account is given of the evidence for the relation between blood alcohol and total body content of alcohol and of the evidence for the rate of oxidation of alcohol in the body. These subjects have been studied extensively, and there seems to be fairly conclusive evidence that if the blood-alcohol content and the time of taking the alcohol are both known, then it is possible to calculate with considerable accuracy the amount of liquor that has been taken. The correlation between alcohol content and intoxication is a more difficult problem, since this relation is subject to the unavoidable error due to the well-known individual variation in respect of susceptibility to alcohol. The extensive data that are accumulating from medico-legal examinations are tending, however, to show that the amount of alcohol needed to impair driving powers in the majority of persons is somewhat lower than was formerly supposed. Widmark concluded that 1.6 parts per 1,000 of alcohol in blood was the average limit above which intoxication might be assumed, but the evidence now available suggests that a driver with 1 part per 1,000 in the blood is less safe on the road than a normal person.

The Earl of Athlone, Chancellor of the University of London, will open the Bernhard Baron Laboratories of the Royal College of Surgeons of England, in Lincoln's Inn Fields, on Wednesday, December 8, at 2.45 p.m.

[1] *Die Wissenschaftlichen Grundlagen der Beurteilung von Blutalkoholbefunden.* By Dr. Herbert Elbel. Leipzig: Georg Thieme. (RM. 7.80.)

Reports of Societies

MEDICAL RESEARCH IN THE POST OFFICE

At a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine on November 26, Dr. H. H. BASHFORD, chief medical officer to the Post Office, gave a brief account of the medical service of this the largest industry, numerically speaking, in the British Isles, and referred particularly to its opportunities for long-distance medical researches as a result of record-keeping.

Dr. Bashford said that the Post Office employed 260,000 persons, of whom the postmen, the largest group, accounted for 80,000. The Post Office had a lifelong pensionable service; on sickness full pay or half pay was allowed, and pay at pension rates for as long as there was a reasonable prospect of recovery. Candidates on entering the service underwent a thorough medical examination. One of the conditions of employment was that every established Post Office servant earning under £5 a week received free medical attendance of a good general practitioner range. The practitioners undertaking this service were paid on a capitation basis. In large towns like Liverpool and Sheffield there might be four or five doctors, each with 600 or 700 Post Office employees on his list; in smaller towns there might be one only. About 2,600 practitioners all over the country were engaged in this service. It implied an extent and intimacy of medical observation such as did not exist in many other industries. He thought the Post Office must be alone among industries in possessing such an amount of material in the shape of accurate sick records of hundreds of thousands of people from the age of 16 (or in some cases 14) to 60. Such records, analysed according to occupational and geographical groups, lent themselves to certain useful lines of research.

Follow-up Studies

An analysis had been made of 3,755 cases of pulmonary tuberculosis observed during the last twenty years. Notwithstanding the long period of sick pay, up to a year or more, it was found quite constantly that only 50 per cent. of all new cases were able to return to work at all, and of those who did return in a supposedly cured or arrested condition, 48 per cent. left the service during the following ten years owing to recurrence or to the onset of other diseases. Those who remained over the ten years, however, showed a more favourable picture, the wastage during the following five years being not more than 14 per cent. A study of the after-histories of 430 cases of gastric and duodenal ulceration showed that 31 per cent., however they might have been treated, regularly incurred a month's absence or more every year, and a further 27 per cent. incurred sick absence every year for from two to four weeks.

Dr. Bashford said that thirty years ago, when he first joined the medical staff of the Post Office, any boy presenting the condition of albuminuria was not accepted for pensionable service, and was usually uninsurable or insurable only at a heavily loaded premium. Owing to the relatively large number of these boys regularly presenting themselves for employment one of his predecessors took the risk and accepted some of them. He was able many years later to ascertain what had happened to this group of persons, numbering thirty. With the exception of three who had left the service for extraneous reasons, two who could not be traced, and one who had died from acute nephritis (having also developed syphilis) seventeen years later, the remaining twenty-four were all in good health, and eighteen of them had sick records below the average. The youngest was then 43 and the oldest 54. From this and other observations it had been possible to demonstrate that this condition *per se* was of no importance whatever.

Another study related to comparative records of physique. It had been found that the present generation of London boys averaged 16 lb. more in weight and 1½ in. more in height than their predecessors twenty-five years ago. The gain in weight among girls was 9 lb. and in height 1 in. A group of 200 young people whose blood pressures according to prevailing opinions were abnormally high, but who were all apparently in good health, had been under observation, and their records in course of time might prove useful. Another observation group of about eighty persons consisted of those who had undergone the operation of thyroidectomy, and it was hoped in course of time to throw some light on the long-distance value of that procedure in enabling persons to stand up to the strain and stress of everyday life.

Anti-catarrhal Vaccine

A comparatively large-scale experiment with anti-catarrhal vaccine had also been carried out. This was done with the object of preventing or reducing the considerable amount of sick absence due to colds or other catarrhal conditions. The experiment, which had related to some hundreds of persons, had extended over three years, and while he did not wish to claim any exaggerated scientific value for these observations, they appeared to indicate that the routine provision of anti-catarrhal vaccine for the staff as a whole was not yet justifiable. About twelve years ago two well-known psychologists of what was then known as the Industrial Fatigue Research Board (now the Industrial Health Research Board) carried out a series of observations with a view to predicting the liability to the later development of inefficiency at work as a result of nervous disorder or some psychological disturbance in earlier years. Ten years afterwards the group was reviewed. Of seventeen boys who had originally been placed in the "serious symptom" psychological group, sixteen were still in the service, none of them had incurred an abnormal sick record, and in every case the character and efficiency report was excellent. Of sixteen boys who had been classed in the "slight symptom" psychological group, one had since resigned, three had been transferred, two were not traceable, and of the remaining ten one had a definitely poor character and efficiency report, and nine had excellent reports. Of the twenty-two boys in the "no symptom" psychological group, fourteen were still in the service, of whom nine had excellent reports, three slightly qualified, and two definitely qualified.

He next referred to the experience of the Post Office in dealing with contacts with zymotic fevers and the gradual reduction of quarantine. Thousands of working days were formerly lost owing to the quarantine of contacts, but the policy of the Post Office had tended towards abolishing quarantine and permitting contacts to remain at work under medical supervision when they were in good health. This policy had saved many thousands of days of quite unnecessary enforced absence. Of 17,844 contacts of scarlet fever, only one in every 251 had subsequently acquired the disease, and of 17,436 contacts of measles, only one in every 670.

Chief Causes of Sickness

Finally Dr. Bashford dealt with the chief causes of sickness and disability in Post Office experience. About 30 per cent. of all illness, of both men and women, was due to the catarrhal and respiratory group of diseases, and about 10 per cent. to the digestive disorder group. The rheumatic group accounted for 10 per cent. on the men's side and 4 per cent. on the women's, and the nervous group of disorders for 6 per cent. on the men's side and 14 per cent. on the women's. A recent analysis

showed that (excluding the engineers) men between 40 and 60 incurred 55 per cent. more sickness absence than men under 40, and women over 40 incurred 58 per cent. more than women under that age. The Post Office now employed a larger proportion of older men than formerly. In 1935 56 per cent. of its male employees were over 40 and 25 per cent. were 50 and over. The average age of all retirements for ill-health on the men's side before the war was 43; during the last few years it had gone up to 50. Dr. Bashford also said that after more than thirty years' experience in the Post Office he thought that true malingering was exceedingly rare.

Sir ARTHUR MACNALTY, who occupied the chair, said that his own impression was that the polyvalent anti-catarrhal vaccine took a certain number of years to "sink in," but he believed that the vaccine did reduce the number of complications of the common cold. In reply to Dr. PERCY STOCKS, who pointed out the extremely low rate of mortality among telegraphists as shown by the Registrar-General's figures, whereas the rate for male telephonists was about the average, Dr. BASHFORD said that relatively few male telephonists were employed as compared with the number of telegraphists, and in view of the small numbers he did not think any significant deduction was to be made.

THYROTOXICOSIS

At a meeting of the Liverpool Medical Institution on November 18, with the president, Professor R. E. KELLY, in the chair, a discussion on thyrotoxicosis was opened by Professor HENRY COHEN and Mr. J. B. OLDHAM.

Professor Cohen doubted if it were possible to define thyrotoxicosis with greater accuracy than as "a state of intoxication dependent on the thyroid." The clinical picture of thyrotoxicosis with increased metabolism and related effects could be reproduced by a continued intake of thyroid extract, but two features distinguished this type of experimentally induced hyperthyroidism from Graves's disease: (1) there was no change in the structure of the thyroid gland, and (2) there was no exophthalmos. Administration of the thyrotropic hormone of the anterior lobe of the pituitary, however, produced characteristic changes in the thyroid gland with colloid loss, a change in the epithelium lining the vesicles from a cuboidal to a columnar type, a decrease in the iodine content of the gland itself, and an increase in the iodine content of the blood and urine. Moreover, exophthalmos resulted, even in thyroidectomized animals, though it was absent after the superior cervical sympathetic ganglia were removed. That these effects of thyrotropic hormone were temporary had been shown to be due to the development of an anti-thyrotropic principle in the blood, which inhibited the stimulation of metabolism by the thyrotropic hormone, though it had no effect on the increase in metabolism caused by thyroxine. Normal animal and human blood had a slight inhibitory effect on the thyrotropic hormones, while the blood of a patient suffering from Graves's disease had none. Recently the anti-thyrotropic principle had been obtained in powder form, and it was clear that its effect was not due to iodine. He had seen many cases of acromegaly with associated thyrotoxicosis. On the other hand, where the pituitary gland had been examined in fatal cases of thyrotoxicosis no gross definable pathology had been observed. Caution, however, was necessary in interpreting these negative findings, because very slight changes might produce gross body disturbances, as was evidenced by the effect of a minute basophil adenoma of the anterior lobe of the pituitary.

Difficulties in Classification

An attempt had been made to divide cases of thyrotoxicosis into two main types: (1) Graves's disease, associated with a diffuse hyperplasia of the thyroid and exophthalmos, occurring in young patients with marked nervous symptoms and subject to spontaneous remissions and relapses, and (2) Plummer's disease, in which the goitre was nodular and eye signs were absent, occurring in older patients with predominantly cardiovascular signs and being usually more progressive in its manifestations. It had been suggested that the former cases were more likely to have a pituitary origin, while the latter were true examples of hyperthyroidism. Typical examples of these two main types did exist, but many cases had features common to both groups; even with nodular goitre there were diffuse hyperplastic changes in the non-adenomatous areas of the gland. These attempted classifications took little heed of the rate and intensity of action of the toxins or of the soil on which they were acting. It was important to recognize that thyrotoxicosis appeared in various guises which overshadowed the classical features. These types of so-called "masked" thyrotoxicosis were, in his experience, mainly: (1) cardiovascular, in which auricular fibrillation, hyperpiesis, or cardiac failure might be the presenting symptom; (2) cases with rapid wasting, especially seen in middle-aged males with a good appetite, so that when associated with slight glycosuria a mistaken diagnosis of diabetes mellitus might be made; (3) with diarrhoea, and rarely any other gastro-intestinal disturbances, though intractable vomiting had in a few cases been the main symptom; (4) cases with psychotic manifestations; and (5) with nervous manifestations, of which ophthalmoplegia and amyotrophic lateral sclerosis were the most important though rare examples.

He regarded psychic trauma, infections, sex cycles, reducing cures, etc., as being activating but not fundamentally causative. Estimations of the basal metabolic rate were unnecessary for diagnosis, the factors of paramount importance being the duration of the toxaemia and its effect on the tissues, which could be estimated only by clinical observation. He thought that Plummer's work on iodine had revolutionized the therapy of thyrotoxicosis. While in the mild case in which psychogenic activation played a part, rest, iodine, and *x*-ray treatment might result in cure, in the majority of cases a subtotal thyroidectomy, after adequate preparation, was the treatment of choice, and should not be delayed. The results in cases conforming to the Graves's type were perhaps less satisfactory than in those of the Plummer type. All cases should be carefully followed up, and residual or recurrent thyrotoxicosis dealt with immediately. Surgery, however, still remained a confession of failure, and he hoped that work on the part played by the pituitary in thyrotoxicosis might eventually lead to a more rational therapy.

Subtotal Thyroidectomy

Mr. J. B. Oldham said that while the immediate mortality in reputable clinics from subtotal thyroidectomy had fallen almost to vanishing point, and some 90 per cent. of the patients were rehabilitated, in some cases the exophthalmos was not cured and mild subjective symptoms remained. Iodine should not be used in the non-operative treatment of toxic goitre except in such acute emergency as thyroid crisis. It was unfortunate that many members of the profession had the impression that iodine was a curative agent, and, given a false sense of security by the temporary benefits derived from its use, they persevered with non-operative treatment until the best moment for surgery was long past. Iodine given for weeks or months lost its power to improve the patient, and so its help was not available when it was most needed—at the time of operation. During the last four years he had operated on 186 cases, and had had three deaths. He had used avertin with gas-and-oxygen anaesthesia in all but one case, and this was the only one in which there were any pulmonary complications. He used the diathermy knife for the skin incision and for dissecting up the skin flaps. As a rule he did not divide either the

platysma or infrathyroid muscles. In every case in this series a one-stage subtotal resection had been done, and it was his belief that the less thyroid left behind the less the likelihood of a post-operative crisis or residual symptoms. He had found that he was draining fewer and fewer cases, and that the most perfect scar was given by interrupted eversion sutures of silkworm gut removed on the second or third day after operation. Mr. Oldham admitted that he followed the usual habit of giving iodine after operation, though he failed to see the logic of this provided full iodinization had been produced before operation and a sufficient amount of the gland had been removed.

Carbohydrate Metabolism

Dr. ROBERT COOPE discussed the association of hyperthyroidism with disturbances of the pancreatic function. In 1912 Cohn and Peiser recorded five cases of inflammation of the pancreas accompanied by hyperthyroidism, while Holst, Garrod, and several other writers had described cases of hyperthyroidism in which at necropsy atrophy and other lesions of the pancreas were revealed. The association of glycosuria with hyperthyroidism was moderately common, but when looked for over a large series of cases was by no means as frequent as was sometimes assumed. John (1928) found hyperglycaemia in less than 10 per cent. of his cases of hyperthyroidism, and noted that the loss of sugar tolerance did not run at all parallel with the severity of the hyperthyroidism. In his experience true diabetes mellitus accompanied by hyperthyroidism was very rare. In the last few years he had seen only three diabetics, all under 35, in whom careful examination revealed a real but quite mild hyperthyroidism. They were given *x*-ray therapy to the thyroid gland; two of them who previously needed 12 to 15 units of insulin daily to keep them "standardized" were afterwards able to take the same controlled diet without any insulin, while the third was enabled to reduce his daily dose from 50 to 17 units. They were "cured" of their hyperthyroidism, but they still remained diabetics.

Mr. PHILIP HAWE, Professor JOHN HAY, Dr. T. F. HEWER, and Dr. G. F. RAWDON SMITH also contributed to the discussion, which was concluded by Dr. ROBERT KEMP. Dr. Kemp said that in a group of ninety cases followed up after operation it was found that in 70 to 80 per cent. of the "nodular toxic group" a "complete cure" had resulted, whereas there were residual symptoms in all but 30 to 40 per cent. of the "diffuse toxic group." The toxicosis of a nodular goitre seemed mainly thyrogenic, so that thyroidectomy was fairly rational and gave good results. On the other hand, the picture of diffuse toxic goitre resembled the experimentally produced "pituitary thyrotoxicosis." Here, where the principal mechanism was untouched, operation was not so likely to be successful, and it was in such cases that Loeser's anti-thyrotropic substance would probably be of great value. At the same meeting Dr. J. M. H. SMELLIE described in detail a most interesting case of acute myelogenous leukaemia.

The Berliner Akademie für ärztliche Fortbildung has arranged a number of international medical postgraduate courses for the spring of 1938, beginning on February 21. Most of these courses are held in German, but special courses will be given also in foreign languages. Programmes and further information may be had from the administrative headquarters of the Akademie für ärztliche Fortbildung, Robert-Koch-Platz 7 (Kaiserin Friedrich-Haus), Berlin, N.W.7. Foreign practitioners and German doctors resident abroad are granted a reduction of fare of 60 per cent. on the German railway company's lines; a foreign doctor can reduce the cost of his stay considerably by utilizing "registered marks"; it is advisable to arrange matters with the local bank before starting.

Local News

ENGLAND AND WALES

Inquiry into Croydon Typhoid Epidemic

The Ministry of Health states that the inquiry to examine the causes leading up to the outbreak of typhoid fever in Croydon, and the steps taken to deal with it, will open at the Town Hall, Croydon, on Monday, December 6, at 11 a.m. As already announced, it will be held by Mr. H. L. Murphy, K.C., who will have as assessors Sir Humphry Rolleston, Bt., M.D., and Mr. H. J. F. Gourley, M.Inst.C.E. The inquiry will be a public one, and Mr. Murphy will be prepared to receive the evidence of any persons interested in the subject-matter of the inquiry.

Voluntary Blood Donors

The fifth annual dinner of the Voluntary Blood Donors Association took place on November 25, with the chairman, Mr. A. J. Carpenter, presiding. More than 200 people were present, of whom 122 were members of the service, accounting for 4 per cent. of the blood donors in the country. It was mentioned that these 122 members had between them given 1,726 transfusions, an average of 15 per donor. A message was read from the King, assuring the members of his deep interest in their splendid and self-sacrificing service. The toast of "The Visitors" was proposed by Mr. A. M. A. Moore, F.R.C.S., and responded to by Sir Kaye Le Fleming, M.D., Chairman of Council of the British Medical Association, who referred to the common bond of interest between the medical profession and the blood donors in their solicitude for the patient. The medical profession, he said, was a little apt to give service freely without expecting much acknowledgement, and that was their only excuse for not more generously acknowledging in a public way the splendid service rendered by blood donors. Sir Kaye Le Fleming went on to suggest that the service given by members of the Voluntary Blood Donors Association was likely to develop in ways which up to now had not been realized. After recovery from a disease the blood was, so to speak, "educated" for the particular complaint. Perhaps it might prove desirable to arrange for a further grouping of donors in relation to the diseases from which they had successfully recovered. Results obtained in the treatment of measles showed that serum from a person recently recovered from the disease was of more value than serum from one who had had measles at some earlier time. Mr. P. L. Oliver, secretary of the Blood Transfusion Service of the British Red Cross Society, said that he had recently attended the International Blood Transfusion Congress in Paris (of which a report appeared in the *Journal* of November 6, p. 923), and after learning of the practice in other countries, he could only say that his belief in the voluntary service obtaining here had in no way diminished. In their own service it had been decided that four transfusions a year was the maximum which a male donor should be allowed to give, and that females should only serve after four-monthly intervals. He added, in view of what Sir Kaye Le Fleming had said, that it had been possible to prepare a short list of adults who had had measles and whose blood was available for prophylaxis in connexion with that complaint. Mr. A. J. Carpenter said that the association was representative mostly of the London service, and had been formed to safeguard the interests of blood donors and to co-operate in making the service as efficient as possible. It had been suggested that the sphere of usefulness of blood donors was likely to be widened. There was certainly much more research to be done, and the association was proud to have the services of Dr. Brewer, Mr. Moore, and Dr. Riddell as members of a technical subcommittee to inquire into future possibilities. Dr. H. F. Brewer, medical

officer to the association, said that a point of interest noted at the Paris Congress was that the delegates were unanimously agreed that blood groups, once established, remained constant. In the matter of storage of blood the service in this country was backward. Citrated blood could be given with safety to a patient two or three days after removal from a donor, but there was little first-hand knowledge or experience of the use of blood kept for a fortnight or so. Citrated blood was being used in France and Spain up to fifteen days after collection.

Sheffield Medical Dinner

The annual dinner of the medical profession in Sheffield was held at the Royal Victoria Hotel on November 25, when Professor A. E. Barnes presided over a gathering of about one hundred and sixty. This year for the first time the wives of members and other lay guests were invited. The chief guests were to have been Dr. Halliday Sutherland and Dr. Gilbert Forbes, the recently appointed police surgeon of Sheffield, but Dr. Forbes was prevented from attending. Dr. A. Gurney Yates, in proposing the toast of "Our Guests," welcomed Dr. Sutherland as his contemporary and fellow graduate at Edinburgh University. He had done pioneer work in the branch of medicine that he had made his own. He had won fame, too, in other fields, having led a life of adventure, and written some delightful books—that were never dry—which many of them had read. He had the faculty of keen observation, and "a wonderful facility for manipulating with the hand of an artist the light and shade of human affairs." Referring to Dr. Gilbert Forbes, Dr. Yates said that he too was a Scot, for whom he prophesied a distinguished career and who could be assured of the support of his colleagues in Sheffield. Dr. Halliday Sutherland, replying to the toast, thanked them for the honour done him and said that these dinners were of real value in bringing the members of the profession into personal contact. One of the biggest of our troubles in the present day was the future of general practice. It was a modern heresy that every change meant progress. It would be a very bad thing if the general practitioner ceased to practise and became a mere cipher. So many things were being taken over by the municipal health services or by the State, and less and less was getting left for the general practitioner to do. Speaking of hospitals, Dr. Sutherland said that in London most of the old hospitals were antiquated buildings, built on highly expensive sites, and in the midst of petrol-laden air. "It is time, and more than time, that the old sites were sold and the hospitals were rebuilt in the green belt amidst the comparatively open country around London." At the same time it would be well if the plurality of appointments held by some members of their staffs were given up, so as to make room for others. The toast of "The Chairman" was proposed by Dr. A. Bremner, and in replying Professor Barnes referred to the debt which the profession in Sheffield owed to the secretaries of their various organizations—the Sheffield Division of the B.M.A., the Panel Committee, and the Yorkshire Branch of the B.M.A.—and particularly on this occasion to Dr. T. E. Gumpert, the secretary of the medical dinner committee.

Society of Apothecaries

A Yeomanry Dinner of the Society of Apothecaries was held at the hall of the society on November 23. After the loyal toasts had been drunk, Mr. H. L. Eason, Principal of the University of London, proposed "The Society of Apothecaries." Mr. Eason said that the society had been founded about 1617, and he quoted several authors whose writings bore upon the traditions which it had maintained from that time up to the present day, the authors he referred to ranging from John Earle in 1628 to Robert Louis Stevenson and Earl Baldwin. In responding to this toast the Master, Mr. Hugh Lett, said that the last twelve months in the society's history had been made remarkable by the conferment of the freedom of the society upon Lord Nuffield and Sir Farquhar Buzzard, on whose shoulders had fallen the onerous responsibilities involved in the administration of Lord Nuffield's munificent gift to Oxford. He traced the history of the Apothecaries' Society, particularly so far as it concerned the gradual advancement of medical education. It was the society that had initiated the process of "signing up" which had so often taxed the ingenuity of students and the credulity of deans of medical faculties. The present curriculum he thought overloaded, so much so that it was becoming questionable as to how far cramming was being encouraged at the expense of the culture of thought and reason. The Senior Warden, Dr. Reginald H. Hayes, proposed "The Guests," and delighted his listeners with the story of the lozenge which Mr. Justice Hawkins gave to Professor Pepper, and which did so much to enhance the reputation of the old pharmacy of the apothecaries in Water Lane. Among the many distinguished guests were Professor R. J. Johnstone, President of the British Medical Association, Sir John Megaw, Surgeon Vice-Admiral P. T. Nicholls, Sir Arthur MacNalty, Lieut.-General Sir James Hartigan, Sir George Chrystal, Sir Francis Fremantle, Sir Buckston Browne, and Air Vice-Marshal Sir Alfred Iredell, with the deans of sixteen medical schools, and the presidents of the Medical Society of London, the Harveian Society, the Society of Medical Officers of Health, and the Pharmaceutical Society. On their behalf Mr. Justice Humphreys, president of the Medico-Legal Society, and Mr. E. A. Crook, dean of the Charing Cross Hospital Medical School, replied to the Senior Warden's toast.

Radium Beam Therapy Department in Birmingham

On November 26 a department of radium beam therapy research was opened at the General Hospital, Birmingham, by Sir Cuthbert Wallace, P.R.C.S. This is the latest development in a programme of extension and modernization of the department of radiation therapy begun in 1934. The unit at present contains two grammes of radium, of which one gramme has been presented to the hospital by Lord Austin, while the second gramme has been lent by the National Radium Commission, who have also promised to lend a further gramme in six months' time. The apparatus has been designed in collaboration with Radium Beam Therapy Research, and incorporates the results of their experiences, together with such improvements, particularly in methods of distance control, as make it one of the best in the country. Special attention has been given to safeguarding the patients and the staff from injury by unnecessary radiation, and allowance has been made in this respect for a possible increase to twenty grammes in two units at a later date. This part of the design was made considerably easier by the fact that a "bungalow" type of ward, separate from the main hospital, was made available for the installation of the unit. The radium itself when not in use is housed in a lead safe, with walls ten inches thick, and is conveyed to the container, after it has been suitably adjusted to the patient, by air pressure, and is returned to the safe automatically, by vacuum, on the completion of the treatment period. The "beam" is produced by means of an opening in the lead container, to which is fitted an applicator made from special tungsten alloy developed as a result of research by the General Electric Company in their laboratories at Wembley. This alloy, while possessing a very high protective value, has considerable advantages in price over both platinum and gold (a pound of it costs roughly twenty shillings), and is far superior to lead in toughness and density, so that it provides an admirable material at a reasonable price where protection without bulk is required, as, for example, in approaching any concave surface, such as the root of the neck or the submental region. It would appear, therefore, that this alloy, by providing for more strict localization of the beam, with less bulk than has hitherto been possible, may present a distinct advance in the design of beam therapy apparatus. Three movements of the beam are available, as in the

Stockholm and Radium Beam Therapy Research units. The amount of radium available will make it possible to work with a radium-surface distance of eight and a half centimetres. It is, of course, important to make this distance as great as is compatible with a treatment time which the patient can tolerate, so as to improve the relationship between the surface and deep intensities (that is, to improve the tumour dose, as compared with the dose to overlying skin).

Manchester Joint Hospitals Board

The second annual report of the Manchester Joint Hospitals Advisory Board gives evidence of the valuable work which is being done by a board so constituted as to include representatives of the City Council of Manchester, the Voluntary Hospitals Council, the University, and the local Division of the British Medical Association. Statistics are being compiled and questionaries are being sent out which, when collected, will give all the information necessary for the consideration of the problem of reducing hospital waiting lists. The possibility of overlapping in the waiting lists of the various hospitals has been gone into, and, surprisingly enough, it appears that no more than eight patients have their names on the waiting lists of two or more hospitals in Manchester. A point that will be of importance in the compilation of future statistics is the need for a system of nomenclature in the classification of diseases which will be used by all the hospitals with which the Board is concerned. The Board has further considered the question of the unification of orthopaedic services, and an account of the working of the fracture service of the Royal Infirmary has received consideration. There were approximately 5,400 new fracture cases dealt with in Manchester during 1935, and from an analysis prepared by Mr. Harry Platt it is estimated that in each future year there will be at least 5,000 new fracture cases. Figures taken from the records of the fracture clinic at the Infirmary reveal that approximately 18 per cent. of the fractures dealt with follow street accidents in which a moving vehicle is concerned; 12 per cent. are industrial; and 20 per cent. arise as a result of domestic accidents or accidents in the course of sports or games. A question which has been referred to the executive committee of the Board is the reduction of working hours of nurses. Apart from the financial considerations affecting the various hospitals, the whole problem is a difficult one and is inevitably bound up with the larger question of recruitment. No major decision on matters of policy has been arrived at during the year under review, owing to the complexity of the various problems, but it is clear from the report that valuable work is being done, the results of which will become apparent in a few years' time. Copies of the report can be obtained free of charge from the joint honorary secretaries, the Town Clerk, Town Hall, Manchester 2, and Mr. R. L. Newell, M.D., F.R.C.S., 2, St. John Street, Manchester.

Tuberculosis in Lancashire

Dr. G. Lissant Cox, central tuberculosis officer to the administrative county of Lancashire, states that in 1936 the death rate from pulmonary tuberculosis (0.46 per 1,000) was the same as in 1934 and 1935, the lowest on record, and that the number of new cases reported had again dropped. In regard to non-pulmonary forms the death rate (0.1 per 1,000) was the same as in 1935, the lowest on record, but the number of new cases reported had risen slightly. Diagnosis and treatment of tuberculosis is provided free in the administrative county, and the net expenditure on the tuberculosis services for the year 1936–7 was £195,075, equal to a rate of 4.75d. in the £. Dr. Cox reports the results of an investigation bearing on the diagnosis of tuberculous patients in the early stages of the disease. The records of two groups of patients were analysed (a consecutive number of deaths from pulmonary tuberculosis in the county occurring in 1920, and a corresponding series of deaths in 1935) in regard to: (1) the average duration of illness up to the time of consulting a medical attendant; (2) the average period under the care of the medical attendant before being first examined by the tuberculosis officer; and (3) the average duration of life after examination by the tuberculosis officer. The respective figures found under these three heads were 11.7, 5, and 18.3 months in 1920, and 9.5, 3, and 27.4 months in 1935. The good relations existing between the administrators of the tuberculosis scheme in the county and the general practitioners are illustrated by the fact that 92 per cent. of the new cases (excluding contacts) were sent before notification to the tuberculosis officers for an opinion as to diagnosis and treatment. The excellent work carried out by the dispensaries is shown in the following table, in which are given figures comparing Lancashire with all counties in England calculated per 100 deaths from tuberculosis:

	Lancashire	All counties in England
Total new cases and new contacts diagnosed as suffering from tuberculosis and receiving treatment under the official scheme	162	141
Number of sputum examinations	516	368
Number of *x*-ray examinations	999	414
Number of home visits by health visitors	4,013	2,542
Number of cases remaining undiagnosed at the end of the year	3	26
Number of cases removed from the dispensary registers as recovered	62	51

The sad note of the report is found in the section on housing conditions. Of 1,856 patients over 15 with the pulmonary form of the disease "considered infectious," 469 occupied a separate bed but not a separate bedroom; and seventy-five not even a separate bed. Among 2,243 similar patients "considered not infectious" the corresponding figures were 440 and 652.

IRELAND

Irish Free State Medical Union (I.M.A. and B.M.A.)

At the last meeting of the Council of the Irish Free State Medical Union, Dr. MacCarvill was elected vice-president for the year 1937–8, and took the chair at the meeting in the absence of the president. It was announced that Mr. C. MacAuley was not prepared to seek re-election as honorary treasurer, and Dr. Frank Lavery (Dublin) was unanimously elected in his stead, the meeting expressing its appreciation to Mr. MacAuley for his past services. Dr. J. P. Shanley was re-elected honorary secretary for the year. The resolution of the annual general meeting instructing the Council to press for a "standard salary" of £300 rising to £500 for all dispensary medical officers was discussed, and after substituting the word "minimum" for "standard" the Council decided to refer the resolution to the Dispensary Medical Officers' Group Committee for consideration and suggestions, and to give full support to that committee should it decide to send a deputation to the Minister for Local Government and Public Health. A series of resolutions from the Connaught Branch were referred to the executive committee, which was given power to take such action as it considered necessary. The resolutions dealt with (1) fees for attendance at inquests and for post-mortem examinations by doctors employed in institutions, and fees and assistance for post-mortem examination by dispensary doctors; (2) fees for dispensary and hospital locumtenents; (3) acceptance by a Board of Health of the substitute nominated by a doctor in the employ of the Board; (4) travelling and subsistence allowances for Council members attending meetings of the Council; and (5) payment of fees to medical attendants in workmen's compensation

cases settled out of court. It was also agreed at this meeting to represent to the Local Appointments Commissioners that dispensary medical officers should be represented on the Selection Boards in the case of dispensary appointments.

A Tribute to Irish General Practitioners

Sir William de C. Wheeler, speaking at a clinical dinner in connexion with the Southend-on-Sea General Hospital on November 23, referred to the role of the general practitioners in the body politic and their heavy responsibilities. He paid a tribute to the work of the general practitioners in Ireland during the period of fighting and unsettled government. He described how the general practitioners in that country had carried out their duties under conditions which would make those trained in the profession of arms shrink and retreat. It was no light matter to travel over roads strewn with mines and explosives at the dead of night, nor was it a joy-ride to go through ambushes and trenches of necessity by forbidden routes. The doctors were often mistaken for combatants and fired on by friends and foes. Some fell wounded, some were killed, others escaped with their cars blown up and destroyed. There was never an instance of refusal to attend a patient when the summons was received. The general practitioner would hold an honoured place when the tempestuous times through which Ireland had passed were chronicled by the future historian. Visits to the Mayo Clinic and the methods adopted by various Continental leaders were subsequently described by Sir William Wheeler, who laid emphasis on the debt of the present generation to British surgeons of the calibre of Macewen, Bland-Sutton, Moynihan, Lane, Trotter, and Stiles.

Typhoid Fever in Donegal

An outbreak of typhoid fever is reported to have taken place among the patients in Donegal Mental Hospital, Letterkenny, an institution housing 700 patients. More than seventy cases had been confirmed at the beginning of this week, with four deaths. The patients include three members of the staff. A preliminary inquiry into the outbreak has been begun by an official from Dublin of the Free State Department of Local Government. The source of the outbreak is declared to be local. According to the *Irish Times* it is attributed to a patient who suffered from typhoid nine years ago and who, on examination, was found to be a carrier.

SCOTLAND

The Edinburgh Chancellorship: Lord Tweedsmuir's Candidature

Two persons have been nominated for the post of Chancellor of the University of Edinburgh, rendered vacant by the death of Sir James Barrie. These are the Marquess of Lothian and Lord Tweedsmuir, now Governor-General of Canada and known throughout the English-speaking world for his writings as John Buchan. At a meeting of the General Council of the University, held on November 26, Lord Tweedsmuir gained a large majority in a vote of members present. A poll was, however, claimed, and voting papers will be issued immediately to all graduates on the printed register of the General Council resident in the United Kingdom. These must be returned not later than December 17. During the proceedings reference was made to the fact that Lord Lothian is a Christian scientist, and to his views on animal experiments. The election of Lord Tweedsmuir was moved by Dr. Edwin Bramwell, who reminded the Council that Lord Tweedsmuir was one of the outstanding Scotsmen of to-day, "one who had done much in the service of the nation, a distinguished scholar, a brilliant man of letters, a man of affairs with a wide administrative experience, a man with a broad outlook whose judgement was universally acknowledged and compelled confidence, a man with influence, who was not only in complete sympathy with, but who took a keen interest in and was necessarily *au fait* with, the requirements of a University. . . . We feel so strongly about Lord Tweedsmuir as an ideal candidate for the post that we are well prepared to wait the two or three years until he retires from his present position." These quotations are from a full report of the meeting in the *Scotsman* of November 27.

Rheumatism Clinic in Aberdeen

At the annual meeting on November 25 of the Aberdeen Branch of the Red Cross Society, the president, the Marchioness of Aberdeen and Temair, said that there was a movement to organize a centre for the treatment of rheumatic disease and for research into its causes, and a desire had been expressed that the Aberdeen district might lead the way in this matter in Scotland. The executive committee of the Scottish Branch of the Red Cross Society, after consultation with Professor Davidson, had resolved to follow the example of the British Red Cross in England, which had established a rheumatism clinic in London that had proved a great success. A grant of £500 had therefore been made for the support of the movement in Scotland. It was proposed in Aberdeen to set up a treatment centre at the new baths, and also a lectureship on the subject at the University, which would lead to further research into the causes of the disease and methods for its prevention and alleviation.

Royal Infirmary of Edinburgh

At the annual meeting on November 24 of the League of Subscribers to the Royal Infirmary of Edinburgh it was reported that the executive had considered the question of members of the League who were unable to get immediate treatment in the Royal Infirmary, and who entered a municipal hospital, being asked to pay the fixed charges for treatment. It had been suggested that the Infirmary might pay the city for the treatment of members in municipal hospitals when they could not get admission to the Infirmary. The executive had decided against this proposal. It considered that there was no satisfactory compromise between the present open-door system with contributions freely given without obligation for treatment, and a contributory scheme under which payment would be made only to the hospital giving the treatment to the patient. It was also stated at the meeting that in the past year 21,000 patients had been treated in the Royal Infirmary, of whom 9,482 were from the city of Edinburgh and 11,514 from the counties of Scotland and England. Both expenditure and income had increased during the past year, although no provision had been made for capital expenditure which was going on steadily. Mr. Russell Paton, organizing secretary of the League, said that it might be assumed that a minimum contribution of twopence per week from all sections of wage-earners was essential for the maintenance of the hospitals on a voluntary basis, even when this was supplemented by auxiliary subscriptions, donations, and endowments.

Departmental Committee on Nursing

The Committee recently appointed by the Secretary of State for Scotland to inquire into the recruitment and terms and conditions of service of nurses in Scotland has now held its first meeting, under its new chairman, Lord Alness. The meeting, which was of a preliminary nature, took into consideration the terms of reference, and decided on the procedure to be followed in carrying out the inquiry. The next meeting is fixed for December 16, at which a start will be made with the taking of evidence. The Committee is open to receive evidence on the subject of its inquiry from persons and bodies interested. All communications should be addressed to the Secretary of the Committee, Mr. W. T. Mercer, Department of Health for Scotland, 121A, Princes Street, Edinburgh.

Correspondence

Collaboration between General Practitioner and Public Health Services

SIR,—With a view to improving the liaison between local public health authorities and doctors in private practice I suggest that the chairman and vice-chairman of the local Division of the British Medical Association be *ex officio* members of the local council and public health committee.

The practitioners concerned would then have the right to: (1) attend the meetings of the council and public health committee; (2) confer with the medical officer of health, and conversely the M.O.H. would have the right to confer with his medical colleagues; (3) receive copies of reports of the medical officer of health.

As you know, the chairman of the local council is *ex officio* a magistrate during his tour of office, thus ensuring a desirable liaison between the local authority and those who administer the law. As a general rule the busy practitioner has not the time to attend all the meetings of the local council, but when he does come forward for election I have noted that he frequently "tops" the poll.—I am, etc.,

H. W. GRATTAN,
Colonel, late R.A.M.C.; late M.O.H. Biggleswade Urban and Rural Districts, Welwyn and Hatfield Rural and Welwyn Urban Districts.

Letchworth, Nov. 29.

Immunization against Typhoid

SIR,—In his letter to the *Journal* of November 27 Dr. Vaughan Facey has raised the question of the "negative phase" and the danger arising therefrom, said to occur after preventive inoculation against the typhoids when given during the course of the outbreak. Among those of the profession old to the ways of typhoid a negative phase occurring after such inoculation has no terrors. The doctrine of this negative phase must have prejudiced many against the use of prophylactic vaccine in the presence of an outbreak, even in spite of much that has been said and written by clinicians against such happening. In practice preventive inoculation given at such a time is, in my belief, the only sure and certain method of *individual* protection against the disease. During the Bournemouth outbreak of last year none among many contacts inoculated developed the disease. Immediately typhoid broke out inoculation was offered to the nursing staff of the Royal Victoria and West Hants Hospital. Most of the nurses and maids elected to be done; and it was noticeable that those nurses who volunteered to be done, although careful as always, had the greater confidence because less afraid of contagion, appearing to have less fear in handling patients. Was this greater confidence justifiable? I conscientiously believe that it was.

Dr. Vaughan Facey recommends trial of serum, given early in full doses. In this I agree with him, although serum in my hands has given equivocal results. To do any good serum must be administered early, because, by the very nature of the pathological processes in typhoid, termination other than by lysis cannot be expected to happen after the first few days of raised temperature. Perhaps time will bring a better, more specific serum than is at present available. But the very essence of success in the management of the typhoid patient lies in the regular cleansing of tongue and mouth; the maintenance of the salt and water balance in the circulating body fluids, which is as important as correct, timed feedings; constant expert nursing; the recognition of the minor importance of drugs; and the use, perhaps, of small repeated intravenous doses of immunized blood. Much, however, should not be expected of curative serum.—I am, etc.,

Bournemouth, Nov. 28. S. WATSON SMITH.

SIR,—I was extremely interested in Dr. R. Vaughan Facey's letter in the *Journal* of November 27 (p. 1092). He writes of the doubts and anxieties which beset many of the members of the profession in Bournemouth last year. I was equally worried when typhoid broke out in the Basque camp, and without doubt many Croydon doctors feel the same to-day. Dr. Facey went to great trouble in consulting leading experts in epidemiology, and discovered that the consensus of opinion was in favour of inoculation and that the risk of a negative phase could be ignored. A negative phase is said to follow an inoculation and may (1) either precipitate and intensify an attack of typhoid in a person actually incubating the disease; or (2) for a few days so reduce the resistance of a healthy person that he may even more readily contract the disease. The fear of inducing this negative phase has prevented many doctors from using typhoid vaccine in the presence of an epidemic.

At the Basque camp we were under the unofficial supervision of the Ministry of Health, and enjoyed the friendliest co-operation with the public health authorities of Winchester and Southampton. The Ministry of Health agreed that camp personnel engaged in sanitation and cooking should be inoculated, but advised against mass inoculation of the children. However, when local committees anxious to receive the children knew that we had typhoid in the camp, they asked that we should guarantee freedom from the disease before dispatching them, and I then arranged general inoculation, including all contacts. This procedure was entirely successful, and no further cases occurred (see *Journal*, October 16). In the early stages sanitation was chaotic and field drainage and water supply were constantly interfered with by mischievous boys, so that it seems impossible to explain the cessation of the epidemic in any other way than the result of inoculation. The actual typhoid cases had been in close contact with many other persons in this crowded camp of 3,280 children and 300 adults, and surely some other children must have been incubating the disease. One asks, therefore, does this so-called negative phase really exist? This practical experiment on a large scale seems to suggest that it does not, and that an effective immunity is established early after inoculation. Furthermore, treatment of enteric by vaccine is highly recommended by some eminent authorities. Replying to Mr. W. Roberts in the House of Commons Sir Kingsley Wood, Minister of Health, stated that the circumstances of the outbreak of typhoid in the Basque children's camp at Eastleigh and that at Croydon were different, and he was advised that general anti-typhoid inoculation in Croydon would not be beneficial. The protection by inoculation or otherwise of individuals resident in houses in which cases of typhoid were being nursed was a matter for consideration by the medical practitioner in attendance in the light of the special circumstances of each case.

I would beg to point out that during any epidemic, once the source of infection has been discovered and stopped,

then the problem is the same as that of the Basque camp—that is, dissemination by contact—also that it is not always easy to locate a source of infection, which may be multiple. Public opinion is very divided on the question of inoculations of any kind, and in these days it is not often that a large-scale preventive inoculation could be carried out under a medical dictatorship such as actually existed in this refugee camp. In war time sewerage and water systems may be damaged daily, to the great danger of the uninoculated public at large. It would not be untoward to suggest that a stock of T.A.B. vaccine should be included in our air raid precautions armamentarium. All available civil supplies were exhausted with the first inoculations at the Basque camp, and the Lister Institute kindly worked overtime to supply enough for the second dose.—I am, etc.,

London, N.W.2, Nov. 27. RICHARD TAYLOR, M.B., B.S.

SIR,—I have recently been consulted by several of my patients as to what precautions they should take against typhoid. Apart from the usual advice of keeping away from contacts, observing sanitary precautions, boiling milk and water, and not eating raw vegetables, I prescribed an oral anti-typhoid-paratyphoid vaccine (T.A.B.) in the form sometimes known as Besredka's tablets. Professor Besredka published his original papers on oral vaccination about twenty years ago. His method of immunization has not become popular in the United Kingdom mainly owing to the low incidence of this disease here as compared with tropical and subtropical countries. Actually, millions of people have been immunized by this method during epidemics of typhoid, dysentery, and cholera in Europe, America, India, and Africa. The Health Department for Capetown distribute these tablets free of charge to doctors, and I have given them to my patients and taken them myself every year while in practice in South Africa. The only symptoms they give rise to are slight headache, gastro-intestinal discomfort, and possibly a slight rise of temperature. Thousands of prophylactic doses of oral vaccine were distributed from 1923 to 1928 in Pretoria alone (Boyd).

Investigations conducted in Madras showed that the proportion attacked among persons given the full course of bilivaccine (three doses) was 1 per cent., compared with 6 per cent. in the untreated controls. Among 33,000 vaccinated persons in Tokyo there was a morbidity rate of 1.86 per 1,000, whereas among 46,000 non-vaccinated persons the rate was 8.5 per 1,000. The advantages of this method are: (1) its efficacy is said to be equal to that of the injection method; (2) immunity is established within five days; and (3) large numbers of people, including children, can therefore be immunized (orally) rapidly, with little discomfort and pain, and at a very small cost to the administration. Cluver (Union of South Africa) states that his patients, particularly the natives, were more willing to be vaccinated, and no malaise followed the ingestion of the antigens, whereas unpleasant reactions were often observed after subcutaneous vaccination.

I firmly believe that this method of oral vaccination materially reduces the incidence of the disease when used in conjunction with the usual measures in sanitation and personal hygiene, and that where typhoid fever is epidemic or threatened Besredka's tablets should be distributed by the health authorities, free of charge, to doctors for their patients. Finally, may I add that doctors throughout the country should be acquainted with this method of immunization. It is not mentioned in several of the leading textbooks, but is referred to in Conybeare's *Text-book of Medicine*.—I am, etc.,

London, S.W.4, Nov. 29. J. V. PINCUS.

*** In a leading article in the *Journal* of April 10, in which reference was made to the oral vaccine of Besredka, to formolized vaccine, and to a vaccine which can be "rubbed into the skin in an ointment or vanishing cream," we stated: "The probability is that all these methods are useful, and it may be that where ordinary subcutaneous vaccination most signally fails either the individuals attacked were exposed to exceptionally heavy infection or the strains used in making the vaccine were unsuitable."—ED., *B.M.J.*

Safe Watercress

SIR,—Watercress has been much written about lately, and it is as well to know that it can be grown directly from seeds in small tanks or tubs, or openly in a sheltered place in our gardens. Those who fear its contamination from water supplies not easily controlled when heavy rains suddenly wash undesirable organic matter into an otherwise perfectly pure water supply will be interested in the article on watercress, page 66, in the *Popular Encyclopaedia of Gardening*, edited by H. H. Thomas, published by Amalgamated Press Ltd.

Most of the watercress consumed by the public is now grown under perfectly safe conditions by firms who have spent much capital and great care in safeguarding this popular article of diet. The real risk arises from the purchase of cheap watercress whose source is the stagnant pools and contaminated streams in urban areas.—I am, etc.,

Bournemouth, Nov. 29. W. JOHNSON SMYTH.

Management of Typhoid Fever

SIR,—In 1936 there were 257 deaths from typhoid and paratyphoid fever in England and Wales—equivalent to a fatality of 10.3 per cent. among the notified cases—and a repetition of somewhat extensive outbreaks in the last few years has drawn attention to the fact that these diseases are far from being extinct in this country. A description of an experience of the management of typhoid fever about thirty years ago might be of interest, although few detailed statistics can be given, for the case-papers were destroyed during the war.

In the three years I was in charge of the typhoid wards of one of the hospitals of the late Metropolitan Asylums Board some 2,139 cases were treated in the Board's hospitals, with a mortality of 14.4 per cent. among those in whom the diagnosis was confirmed. In practically a quarter of the fatal cases perforation was the immediate cause of death, while haemorrhage, which occurred in 11 per cent. of all cases, accounted for the fatal issue in nearly a quarter of the remainder. Perforation and haemorrhage were thus formidable complications, and I tried a number of variations on the usual management with a view to reducing their incidence. It was unlikely that any modification of the then routine would have an appreciable effect on cases admitted in an advanced stage, and these unfortunately were relatively numerous, but it was hoped that better results might be obtained in cases admitted earlier in the course of the disease.

The mechanism of perforation is better studied on the operating table than in the post-mortem room, where the original state is apt to be hopelessly obscured by peritonitis. I had been present, as operator or assistant, at twenty-four laparotomies for perforation, and had observed that these cases could be divided into two groups: (1) Those in which the visceral peritoneum over an ulcer had become adherent to

something more fixed than itself, so that peristalsis had produced a tearing-through of part of the ulcer. In one patient an ulcer adherent to the pubes had been partially torn across; in another an ulcer adherent to an appendix epiploica had given way just beyond the adhesion; in a third case the torn ulcer had been, in part, firmly glued to the peritoneum over the psoas muscle; in yet another the tip of a Meckel's diverticulum adherent to the abdominal wall had been torn off. In these cases the tear was larger than in the second group, and faecal matter, sometimes in considerable amount, had escaped into the peritoneal cavity with a uniformly fatal result. (2) Those in which the sloughing had extended up to the peritoneal coat and this had given way, the usually minute opening allowing the escape of gas and perhaps a little fluid before being blocked by the slough or bowel contents. In these cases, too, it seemed likely that peristalsis had acted as the immediate cause, either by attempting to move a slough which had not quite separated or by increasing the tension in a part of the bowel weakened not only by ulceration but by distension. The onset of symptoms in many of the cases confirmed the idea that the perforation had been associated with a more or less vigorous peristalsis, since often it bore some relation to the giving of an enema, or the patient had just passed a stool or, what was equally suggestive, had felt inclined to do so.

It seemed likely that haemorrhage also was largely due to distension and peristalsis, the former leading to a thinning of the bowel wall and the latter to premature separation of the slough. The indication, therefore, was to reduce both to a minimum by the local application of cold, assisted if necessary by intestinal sedatives, removing at the same time the need for peristalsis by giving a diet which, while sufficient to maintain the strength of the patient during this long illness, gave a minimal residue. Cold was applied continuously to the abdomen by means of a large coil of flexible aluminium tubing, the terminals of which had attached to each a length of rubber tubing weighted at the end. This had the advantage of being light and could be adjusted closely to the abdomen by means of a bandage tied round the waist; the patient was thus enabled to lie on his side, and so assist in the prevention of bedsores and hypostatic pneumonia. Water was slowly siphoned from a toilet jug placed on a locker to a jug standing on the floor, the siphon action being started with a ball syringe; when the first jug was nearly empty the rubber tube was pinched and the jugs interchanged. In hot weather or when the patient's temperature was high ice was added to the water. The daily diet consisted of 2½ to 3 pints of whey, with 6 to 8 teaspoonfuls of plasmon and the same quantity of lactose, 4 to 5 oz. being given two-hourly. The mixture was pasteurized in bulk, and the feeders boiled. A teaspoonful of lemon juice, orange juice, or raw-meat juice was administered at intervals. The fact that the plasmon did not entirely dissolve in the whey disturbed some patients; other preparations now available are free from this objection, and doubtless the dietary could now be improved in other respects. An enema was given about twenty-four hours after the diet had been started, in order to evacuate thoroughly the lower bowel and thus start with an intestine as free from solid contents as possible. Afterwards every effort was made to prevent the bowels being opened, a starch-and-opium enema being given after each stool; if this was not effective opium in some form was administered by mouth. In the fourth or fifth week of constipation, usually not before, the patient complained of uneasiness in the rectum, and a single enema was given to empty it.

The results were more or less as had been anticipated. As a rule in the moderately early cases no great difficulty was experienced in preventing action of the bowels, the abdomen did not become distended, and the general nutrition remained better than had been customary before this routine was instituted. Contrary to the belief then prevailing, no evidence was found that the action of the bowels was of service in limiting toxaemia; indeed the reverse appeared to be the case, and more than one patient's bowels remained unopened for five weeks without ill effect. No instance of perforation or haemorrhage occurred among those whose bowels were brought under control. The treatment probably made little difference, on the other hand, to those who had been admitted in the later stages of the disease, and in whom it was often found impossible to arrest the diarrhoea; all the fatalities occurred among these cases. It was interesting to find, however, that although some of the latter had only been on the special diet for a few days, at necropsy the lumen of the bowel was found to be markedly diminished as compared with cases treated in the usual way, and its walls to be thickened and strengthened thereby. Further, the routine had the advantage that it very considerably reduced the work of the nurses, and incidentally the risk of their acquiring the disease.

It is only right to conclude by remarking that in consequence of my transfer to another branch of the service I was able to apply the method during one season only. I have heard from friends, however, that it has given satisfaction in a number of small outbreaks in this country, and also in a more extensive one which occurred among the employees of an African mine, where the nursing of enteric cases would otherwise have been extremely difficult under the primitive conditions prevailing.—I am, etc.,

W. T. GORDON PUGH, M.D., F.R.C.S.,
Late Medical Superintendent, Queen Mary's Hospital, Carshalton.

Bournemouth, Nov. 29.

Atelectasis and Bronchiectasis

SIR,—Dr. G. H. Jennings's interesting article (*Journal*, November 13, p. 963) on re-expansion of the atelectatic lower lobe and the disappearance of bronchiectasis again calls attention to the important question of acute atelectasis and/or massive collapse, a phenomenon concerning the aetiology of which we are learning a great deal, and a condition which we realize may in some cases be cured by very simple measures. Dr. James Maxwell, in the current number of *St. Bartholomew's Hospital Reports* (1937, **70**, 183), has described three cases which were under the care of himself and Dr. E. R. Cullinan and Dr. Geoffrey Evans. In one the lung re-expanded completely after bronchoscopy; in another after attempting to give lipiodol, which made the patient cough violently, so displacing the obstructing plug; in the third after breathing exercises.

It is, however, on the second part of the title, "the disappearance of bronchiectasis," that I would venture a word of criticism. In atelectasis the bronchi, as Dr. Jennings says, are crowded together, but they are also very much shortened. When an elastic tube is made shorter by contraction or otherwise it must widen or become distorted, and this, to my mind, is what the radiograph, taken after the injection of lipiodol, in the article shows. Etymologically the author could justify the use of the word bronchiectasis as meaning merely dilatation of bronchi, but this inevitable and transient dilatation is surely not what we mean anatomically by bronchiectasis. There has been so much theoretical nonsense talked and written about the mechanism of the production of bronchiectasis that I think we cannot be too careful in our nomenclature and description. If the implication is that this transient condition is potentially bronchiectatic one must regard it as mere hypothesis. I admit the high negative pressure in the pleural cavity in these cases, but I doubt if mere retraction-produced enlargement of calibre without an infective process produces bronchiectasis. It is this fact, if such it be, that may explain the contradictory observations quoted in the article.

There are doubtless different types of bronchiectasis, but they are not to be classified by the pattern, which to my mind is as irrational and useless as classifying flowers by their colours. The subdivision into obstructive and

non-obstructive serves a useful clinical purpose, but again is probably not a natural classification. It would seem probable that in every case, except in the congenital variety, an infective process is at work with destruction of the bronchial wall, and the question of the re-epithelialization of the resulting space in some cases cannot, I believe, be altogether dismissed. We have had the coughing theory of bronchiectasis, the inspiratory theory, the expiratory theory, the weight of retained secretions theory, the specific infection theory, the pleural adhesion theory, and the fibrosis theory, all probably false, and now comes the high negative pressure and atelectasis theory, which probably has a great deal more of substance in it as an explanation of the occurrence of a proportion of cases; but we must proceed carefully, and especially so when we speak of the disappearance of bronchiectasis.—I am, etc.,

F. G. CHANDLER, M.D., F.R.C.P.

London, N.W.1, Nov. 23.

Disseminated Focal Pneumonia

SIR,—After reading the comments by Dr. L. G. Higgins (*Journal*, November 20, p. 1045) on the article by Dr. J. G. Scadding (November 13, p. 956) I feel I must express my regret at two of his remarks.

First, "the sputum, examined at the request of anxious relatives, shows no unusual organisms." So long as sputum is only examined for tubercle bacilli at the request of relatives, so long will many open cases of pulmonary tuberculosis be missed, or the diagnosis delayed. Examination of sputum is second only in importance to the history and the symptoms of the patient. Abnormal physical signs in the chest, which are notoriously misleading, should take third place in importance. Secondly, "I have never suggested an *x*-ray examination of the chest, partly because the resulting pictures would certainly frighten everybody." I can only think that Dr. Higgins has had the misfortune in the past of being "let down" by his chest films—that is, through their being technically faulty, or faultily interpreted. Good serial films properly interpreted are again essential if doubtful or chronic chest cases are to be scientifically investigated and if tuberculosis is to be finally excluded.—I am, etc.,

Winsley Sanatorium, Bath, Nov. 21. A. J. P. ALEXANDER.

Contact Lenses

SIR,—The question of contact lenses has aroused considerable interest since the presentation of Dr. Dallos's paper on the subject at the Oxford Ophthalmological Congress. That correcting lenses worn in contact with the cornea offer, in theory, the best means of correction has long been recognized, but the practical difficulties of making a glass which is optically perfect and at the same time wearable for long periods have been usually looked upon as almost insuperable. As long ago as 1887 Muller succeeded in demonstrating that it was certainly possible to make such a glass, but the technical difficulties remained great. With the introduction of ground contact lenses fresh interest in the subject was aroused, and a certain number of patients benefited. The disadvantages of the original ground contact lenses may be summed up by saying that since they all have a scleral portion ground to a spherical curve they are unsuitable for use in cases of scleral astigmatism (which are commoner than was formerly thought), and that as they exist only in a relatively small range of sizes it is not always, or indeed often, possible to find one which can be tolerated.

Various attempts to overcome these difficulties have been made in recent years, and the most successful as well as the most scientific certainly appears to be that advocated and perfected by Dr. Josef Dallos of Budapest. In his method of fitting, a mould or cast of the anterior segment of the eye is first made and the glass then formed accurately to this. The final fitting (which includes removal of pressure on the cornea and limbus region where close contact cannot be borne) is done by grinding away the glass by hand, with frequent controlling on the patient, until a perfectly even and light pressure is obtained. Such glasses can be worn for long periods without discomfort or harm to the eye, and are of inestimable benefit in cases of conical cornea, irregular corneal astigmatism, aphakia, and high errors of refraction generally. They give a retinal image of normal size, and an increased visual acuity over that obtainable by spectacle lenses in such cases, as well as a full field of vision. Their use is greatest in cases in which full visual acuity cannot be obtained with spectacles, but they are also indicated for occupational reasons—for example, for stage and film work and in patients exposed to rain and steam where glasses would be likely to fog.

Such contact lenses manufactured by the method and under the supervision of Dr. Dallos are now obtainable in this country, and a centre is in existence in London to which patients can be referred for the processes of fitting. Courses of instruction in the technique are also to be held, and a section dealing with hospital cases has been inaugurated. The results obtained so far seem to justify a wider recognition of the value of Dr. Dallos's work in this direction.—We are, etc.,

A. RUGG-GUNN.
F. A. WILLIAMSON-NOBLE.
IDA MANN.

London, W.1, Nov. 18.

Unilateral Clubbing of Fingers

SIR,—May I seek the help of your columns to ask any of your readers in the London area who may happen upon a clear case of unilateral clubbing of the fingers to place me in touch with the patient? Such cases would be very helpful to investigations that are being undertaken in my department, and I should be grateful for this assistance.—I am, etc.,

Department of Clinical Research, University College Hospital Medical School, W.C.1, Nov. 29. THOMAS LEWIS.

Antuitrin S Intradermal Pregnancy Test

SIR,—I read with interest the article in the *Journal* of November 27 (p. 1069) by Dr. A. Morton Gill and Mr. John Howkins on their investigations into the antuitrin S intradermal test for pregnancy. About a year ago a colleague, Dr. W. S. Haynes, and myself, working at the General Lying-in Hospital, York Road, investigated this test on a series of pregnant and non-pregnant women. Our conclusions were exactly the same as those of Dr. Gill and Mr. Howkins, and so hopelessly inaccurate were the results that, after applying the test to about twenty-five cases, we abandoned it. We also investigated the possibilities of using the bitterling fish for a pregnancy test. These small fish, when the urine of pregnant women is added to their water, become red about the belly in the case of the males and produce an ovipositor in the case of the females. We had great success until we

bought a batch which were already in oestrus, and were giving positive results when we got them from the dealer. The female fish is the most useful, but until oestrus takes place they cannot be differentiated from the males; they are a great nuisance to look after, and one can never be sure that they are not having an oestrus of their own. These facts caused us to abandon this test also, although other workers have written enthusiastically about it.—I am, etc.,

Portsmouth, Nov. 27. STANLEY WAY.

Puerperal Fever in General Practice

SIR,—It seems to me that the future general practitioner will be quite satisfied if he wears a mask and injects sulphanilamide into his patient. His midwifery will not matter. The fatal issue in the case reported by Dr. Price Williams (*Journal*, November 27, p. 1094) might just as easily have been brought about by bad asepsis—dirty needles, badly sterilized gloves, or septic sutures—as by throat infection. Let the general practitioner be taught to use masks, let him be taught to use sulphanilamide, but let good practical obstetrics be in the foreground of his technique. This aspect of the subject seems likely to be forgotten.—I am, etc.,

Dublin, Nov. 27. BETHEL SOLOMONS.

Expulsion of Placenta in Advance of Foetus

SIR,—The case reported by Dr. J. W. Nankivell in the *Journal* of September 11 (p. 527) reminds us of a similar one admitted into the Government Civil Hospital recently. The patient was an Indian, aged 35 years and in her eleventh pregnancy. She was admitted at 3 a.m. on August 8, coming from the country with a history of profuse vaginal haemorrhage at 9 p.m. the previous day.

On examination the fundus was at the level of the umbilicus. Per vaginam, it was found that the placenta was almost completely extruded into the vagina; the cervix was three-quarters dilated and the foetus occupied a transverse lie. Without much difficulty an internal version was performed and a leg pulled down. An hour and a half later the patient delivered herself of a stillborn female child of about six months' gestation. Notwithstanding the abundance of the haemorrhage the patient's condition on admission was fairly good, and she stood the necessary manipulations well without any anaesthetic. Her pulse was somewhat rapid, but it rallied soon after the subcutaneous injection of one litre of normal saline. No further haemorrhage occurred from the time of her admission until her delivery. The puerperium was uneventful and the patient was discharged a week later.

We did not think of publishing this case, as we were not aware of its extreme rarity. In this remote corner of the globe reference literature is sadly lacking, and we had no means of gauging the frequency of this anomaly.—We are, etc.,

YVES CANTIN,
Medical Superintendent.
M. SHUN-SHIN,
Resident Medical Officer.

Civil Hospital, Port Louis, Mauritius, Nov. 5.

Prophylaxis of Ophthalmia Neonatorum

SIR,—The following note may be of use to Lieut.-Colonel H. Williamson (*Journal*, November 13, p. 995). During the past twelve months (November, 1936, to November, 1937) there were 2,701 babies born in the Rotunda Hospital. Of these two developed ophthalmia neonatorum, and in both the gonococcus was present in the smear. In each case, however, all discharge had ceased after four days' treatment, and no corneal ulceration developed. The prophylactic routine in the Rotunda Hospital consists of two essentials. First, the cleansing of the lids before they are opened with dry sterile cotton-wool. This should never be omitted and reliance placed solely on the use of drops. Secondly, drops of 1 per cent. silver nitrate are instilled into each eye immediately after the cleansing. As I have never known a severe attack of ophthalmia neonatorum to follow the use of 1 per cent. silver nitrate, and have never seen any ocular damage result from its use, I do not consider it wise to substitute another drug for one so well proven.—I am, etc.,

Dublin, Nov. 24. L. B. SOMERVILLE-LARGE.

Spinal Anaesthesia for Caesarean Section

SIR,—We have been interested in the differences of opinion that have arisen on the subject of spinal anaesthesia for Caesarean section since the appearance of Dr. H. K. Ashworth's article (*Journal*, October 2, p. 671). The last fifty cases requiring Caesarean section in the obstetrical department of this hospital have been given spinal anaesthesia as a routine measure. No deaths resulting directly from the anaesthetic have occurred in this series. The anaesthetic used has been tutocaine dissolved in the patient's own cerebrospinal fluid. The ages of the patients have ranged from 18 to 40 years.—We are, etc.,

FOUAD MURAD,
A. PARHAD,
Obstetrical Department,
Royal Hospital.

Baghdad, Nov. 16.

Protection against Ether Vapour

SIR,—I have followed with interest your excellent series of articles on anaesthesia. The medico-legal points have been admirably dealt with in the *Journal* of November 13 (p. 976), but there is one point which, in the interests of both law and medicine, requires clarification. Mr. Harcourt Kitchin states that "some anaesthetists protect the patient's face with vaseline or oil." It should, I think, be made very clear that vaseline or oil should never be used on the patient's face until the administration of the anaesthetic has been brought to a close. Quite low concentration of ether *vapour* will, if the face is smeared with vaseline, cause great irritation to the conjunctiva. Actually such a procedure is probably the most certain way to produce an "anaesthetic eye," and I mention this fact as anaesthetists may be tempted to use vaseline to make a more gas-tight junction between mask and face when giving gas and oxygen: then, if a little ether vapour has to be given, the ether dissolves in the oil, enters the eye, and the damage is done.—I am, etc.,

R. K. ROBERTSON,
Hon. Anaesthetist, Sheffield Royal Hospital.

Sheffield, Nov. 22.

Technique of Cataract Extraction during Narcosis

SIR,—Mr. Basil Graves's reply (*Journal*, November 20, p. 1047) to my letter (October 2, p. 681) calls for a rejoinder. It is gratifying to know that the difficulties as regards feeding and evacuation of the bowels and bladder that I visualized do not arise in his unconscious patients. As in his reply there is no mention of the diseases that sometimes complicate cases, is one to assume that all his patients have been old people in sound health, or that there

is no contraindication to his method of narcosis? The dread of operation is all the greater in ailing patients; hence the need for making them care-free is also greater. When a new method involves the employment of such large doses as he uses, especially of more than one narcotic, trial in a large number of cases is necessary to ascertain its freedom from danger. I do not know how often Mr. Graves has used his method of narcosis, but if further experience proves it to be safe it would be of help in exceptional cases even to surgeons who prefer retaining the co-operation of the patient, and we shall have cause to be thankful to Mr. Graves for his bold venture.

As regards sitting the patient out of bed the next day, this has been my practice from the beginning of my ophthalmic career, irrespective of the technique of the operation. Provided the patient is instructed to keep his head up and be gentle in all his movements no harm results. My operations are mostly simple intracapsular extractions with retention of a conjunctival bridge; this is practicable as I extract the lens laterally with Elschnig's toothless capsule forceps. But the conjunctival bridge is not essential to enable the patient to sit out of bed the next day, as before 1929 I only cut out a conjunctival flap; at the same time retention of a bridge is certainly preferable. Unless under a mydriatic the pupil does not dilate sufficiently for the manipulation of the capsule forceps and the delivery of the lens, I never do an iridectomy. I see no justification for mutilating the iris in a hundred cases to avoid a possible prolapse in one or two patients, especially as the process of mutilation is liable to produce complications that need not otherwise arise, quite apart from the cosmetic and optical advantages of an intact iris.—I am, etc.,

Eastbourne, Nov. 25. D. V. GIRI.

Research in Rheumatism

SIR,—In 1925 the Chief Medical Officer in the Ministry of Health defined the arthritic unit as an institution situated near and working in the closest co-operation with a large teaching school of medicine or a university, which would enable it to fulfil the purpose of research and observation, as well as treatment. Here patients would come at the early stages of their disease for thorough examination by modern methods, diagnosis, and record; here the focus of infection would, if possible, be found and removed; here the bacteriological and biochemical investigation of each case would be completed before the patient was passed on to other institutions; here orthopaedic surgery, if necessary, would be performed. This is what I had in mind in saying that the St. John Clinic, through the help of Sir Frederick Menzies and the L.C.C., had at St. Stephen's Hospital the first rheumatic unit.

I fully value the individual research work done by Dr. Poynton, and do not fail to recognize that of the co-operative work done by Dr. Buckley and the bacteriologist, chemist, and radiographer at the Devonshire Royal Hospital in Buxton, which approaches near to that of a rheumatic unit, but fails in close association of orthopaedic surgery and postgraduate teaching. The St. John Clinic and L.C.C. Unit does fulfil all the conditions laid down by Sir George Newman and elaborated by Mr. Timbrell Fisher, who pointed out in his book on chronic arthritis (1929):

"There must be a physician thoroughly experienced in such cases, a surgeon with official knowledge and interest in the orthopaedic problems concerned, a bacteriologist, a biochemist, specialist skilled in metabolic investigations, experts in the various forms of physiotherapy, a radiologist, a dentist, and a nose and throat specialist. There should be a modern operating theatre where open operations upon joints can be performed, and a smaller one for manipulations or other minor operations."

—I am, etc.,

St. John Clinic, London, S.W.1, Nov. 29. LEONARD HILL.

SIR,—My attention has been drawn to the letter from Sir Leonard Hill in the *Journal* of November 20 (p. 1045), in which he mentioned statements in the Press to the effect that the new department for rheumatism and arthritis, now in course of construction, at the Hospital of St. John and St. Elizabeth is the first of such units, and pointed out that the St. John Clinic and Institute of Physical Medicine has already been carrying out research work in rheumatism and arthritis for the past two or three years. While agreeing with Sir Leonard Hill I should like to point out that the new department at the Hospital of St. John and St. Elizabeth is, however, the first unit to be founded under the auspices of the Empire Rheumatism Council, and the first department solely devoted to research into rheumatism and arthritis to be attached to a general hospital.—I am, etc.,

F. DUDLEY HOBBS,
Secretary, Hospital of St. John and St. Elizabeth.

London, N.W.8, Nov. 22.

Legacies for Medical Charities

SIR,—The figures submitted by Dr. Henry Robinson in your last issue as to the considerable number of large estates left by members of our profession, and the infrequency amongst them of bequests to the medical charities, are really heartbreaking. I am reminded by them that some three or four years ago one of your readers wrote proposing that if nineteen others would do the same he would engage to leave £100 in his will to a medical charity. I had the curiosity some time later to inquire how many responses had been received to this offer: the answer was one. We most certainly need waking up, and I trust that Dr. Robinson's article will evoke better results than were obtained four years ago. Incidentally, I have recently heard on good authority of a member of our profession who died a few months ago and left upwards of £70,000. He had subscribed a guinea to one of the charities for a number of years; but when, after a decent interval, his widow was approached to continue this subscription she replied that she could not afford to do so.—I am, etc.,

Nov. 30. EX-CHARITIES DIVISIONAL SECRETARY.

New Clinical Opportunities for Women Students

SIR,—There are twelve medical schools in London at the present time. To the superstitious the addition of another may seem ill-omened, but I hope that the majority of your readers will welcome the fact that the University of London has recently approved the West London Hospital as an institution for the purposes of the M.B., B.S. degrees for external students.

Nine of the London medical schools exclude women entirely, and I imagine that London is the only city in the world where such a state of affairs exists. Women who wish to study medicine in London have great difficulty in finding the necessary accommodation at the three hospitals which will accept them. Many are driven to the provinces, and not a few have to give up all thoughts of following a profession which is offering increased scope to women of the right type.

The University of London, in conjunction with the West London Post-Graduate College, has been exploring the possibility of remedying this situation for over three years, and the present recognition is the first step. The sister Universities of Oxford and Cambridge have also granted recognition, and it is hoped that the other examining bodies will follow suit.

A small number of undergraduate students is already at work at the West London Hospital, where the clinical facilities should be in no way inferior to those available at other and older schools. A considerable number of applications for next year has already been received, and it is hoped that this letter may bring the matter to the notice of many who are at present ignorant of this important new development.

While it is anticipated that the new school will be patronized largely by women, whose difficulties it has been designed to meet, it is not proposed that it should necessarily be confined to the one sex. We have been accustomed to cater for postgraduate students of both sexes for the past forty years, and it seems desirable that the principle of sex equality should be preserved. Moreover, there is no immediate intention of giving up the postgraduate side of the work of this college, although that may ultimately be necessary.—I am, etc.,

MAURICE SHAW,
Dean of the West London Post-Graduate College.

Nov. 23.

Conscious Behaviour

SIR,—In the account of the Huxley Lecture in the *Journal* of November 27 (p. 1082) Professor E. D. Adrian is reported as saying that there was "general acceptance of the idea that conscious behaviour was guided by a balance of unconscious forces, and would be impossible without them." Would it not be more correct to say that conscious behaviour was "built upon," or "energized by," or "impulsed by" unconscious forces, rather than guided? Surely the neocortex or neopallium is the distinctively human organ of a personal intelligence and discriminative power—without which we should be reduced to irresponsible robots.—I am, etc.,

Beckenham, Nov. 28. COURTENAY C. WEEKS.

The Sex Ratio

SIR,—There has appeared some correspondence in your columns (*Journal*, November 6, p. 936) regarding the ratio of males to females from childhood to old age. Statistics show that 105 to 106 males are born to every 100 females, but in old age the females outnumber the males. The number of male children actually conceived is much higher, being about 120 to every 100 females. The number of male foetuses that die before birth owing to miscarriages and stillbirths accounts for the reduction of the figure. As the number of sperms bearing the X chromosome (female-begetting) and the Y chromosome (male-begetting) are produced in exactly equal numbers, there should be an exactly equal number of male and female children born. This is not so. Figures for all countries show the male preponderance. The reason is that excessive vaginal acidity hinders conception—the basis of practically all chemical contraceptives is acid in one form or another. Therefore, in order that the woman should conceive at all the vagina must be alkaline or less acid. This favours the male-begetting sperms, hence the male preponderance.—I am, etc.,

London, W.1, Nov. 21. D. H. SANDELL.

Obituary

O. CHARNOCK BRADLEY, M.D., D.Sc.

Principal, Royal Veterinary College, Edinburgh

The death took place at a nursing home in Edinburgh on November 21 of Principal Orlando Charnock Bradley, head of the Royal (Dick) Veterinary College, Edinburgh. Dr. Bradley was born in 1871 in Lancashire, and after studying for the veterinary profession qualified M.R.C.V.S. in 1892. Being specially interested in anatomy, he became assistant to the late Professor Williams in the Veterinary College, and at the same time prosecuted the study of medicine at the University of Edinburgh, where he graduated M.B., Ch.B. in 1900. He was appointed Goodsir Memorial Fellow in that University in 1903, and as the result of his research work gained the degree of D.Sc. in 1905. In 1907 he took the M.D. He joined the staff of the Royal (Dick) Veterinary College in 1900 as professor of anatomy, and at the same time was appointed lecturer on comparative anatomy in the University of Edinburgh.

In 1911 he was appointed Principal of the Royal (Dick) Veterinary College, and conducted the transfer of the college from its old premises in Clyde Street to the new building which it at present occupies. The erection of the College was considerably delayed by the war, but Principal Bradley's strenuous efforts were effective both in raising funds for it and in completing the buildings. Under his direction the College has made remarkable progress, its students increasing from some seventy or eighty in 1911 to over 300 at the present time. His eminent services were recognized last year when he celebrated his semi-jubilee as principal, and was presented with his portrait. Dr. Bradley became a member of Council of the Royal College of Veterinary Surgeons in 1911, and was its president in 1920–2, while from 1914 to 1919 he was chairman of its Parliamentary Committee. He took a prominent part in the formation of the National Veterinary Medical Association, and was president of that body for several years up to 1922. He was a distinguished member of the British Medical Association, which he joined in 1903, and he acted as president of its Section for Comparative Medicine at the Annual Meeting in Edinburgh in 1927. He was also a Fellow of the Royal Society of Edinburgh.

Dr. Bradley conducted much research work, and his published papers in connexion with veterinary medicine number over one hundred. He was also the author of a *History of the Edinburgh Veterinary College* (1923), *The Topographical Anatomy of the Horse* (1920), *The Structure of the Fowl* (1915), and *The Topographical Anatomy of the Dog* (1927). Dr. Bradley was also an ardent horticulturist, and was well known for his cultivation of new varieties of delphinium and other flowers at his country house near Gifford. He had a world-wide reputation, not only for the research which he carried out, but also as an organizer of the veterinary profession, and much of the advancement that has taken place in veterinary medicine in recent years is attributable to his efforts.

The funeral took place on November 24 at the Edinburgh Crematorium, and a memorial service was held in Hope Park Church which was attended by large numbers of the staff and students of the Royal (Dick) Veterinary College, as well as by representatives of other bodies with

which the late principal had been associated, including the Corporation and University of Edinburgh and various veterinary associations.

Dr. IVOR NICHOLAS LEWIS died at his home in London on November 20. Born in 1905, he was educated at Christ's College, Brecon, and St. George's Hospital. He qualified M.R.C.S., L.R.C.P. in 1927, and was casualty officer, house-surgeon, and house-physician at St. George's, and afterwards resident medical officer at St. Andrew's Hospital, Dollis Hill. He returned to St. George's as a resident anaesthetist, and in 1930 was appointed assistant anaesthetist, and in 1931 anaesthetist, to the hospital. His other appointments were those of honorary anaesthetist to the Metropolitan and Brompton Hospitals, and to St. Andrew's Hospital, Dollis Hill, and he was on the consulting anaesthetists rota of the London County Council. Ivor Lewis, although only 32 years old at the time of his death, had been well known for some years for his skill and ability. He qualified at the period when the science of anaesthesia was making rapid strides, and he was always a pioneer in the introduction of new methods. In 1931 he devised the gas-and-oxygen machine which is known by his name, and which combined portability with great efficiency. In 1930 he published an article in the *British Journal of Anaesthesia* on avertin technique in thyroid surgery. From its earliest days he had been a great advocate of the use of avertin. In September of this year his contribution on endotracheal anaesthesia to a series of invited articles then being published in the *British Medical Journal* evoked a lively correspondence. Apart from his professional interests he was a keen yachtsman, and a prominent member of the United Hospitals Sailing Club, of which he was for several years honorary treasurer. At the time of his taking over that office the club was in a serious position financially: when he retired a short time ago it was established on a firm financial basis. His tragic death will be deeply regretted by many friends and colleagues.

Colonel ERNEST ARNOLD WRAITH, C.B.E., D.S.O., T.D., who died at Queen Mary's Hospital, Roehampton, on October 30, at the age of 61, was the younger son of the late Alfred Wraith of Ossett, Yorks. He was educated at Wakefield Grammar School and the Leeds School of Medicine, and qualified as M.R.C.S., L.R.C.P. in 1899. After holding appointments as house-physician at Leeds General Infirmary and the Clayton Hospital, Wakefield, he served throughout the South African war as a civil surgeon. During the great war he was in command of the 1st North Midland Field Ambulance, 46th Division, and later was A.D.M.S., 58th Division. He received the D.S.O. and C.B.E. and was mentioned in dispatches. After the war he became D.C.M.S. in the Ministry of Pensions, and in that capacity was widely known and esteemed. He had been a member of the British Medical Association for twenty-four years, and was assistant honorary secretary of the Shropshire and Mid-Wales Branch from December, 1924, to October, 1926.

Dr. WILLIAM BLACKLEY DRUMMOND died on November 16 at Dunfermline. He graduated in medicine at Edinburgh University in 1891, with first-class honours, and proceeded M.D. in 1918. After filling the post of house-physician at the Royal Infirmary and the Royal Sick Children's Hospital he engaged in private practice. He became a Member of the Royal College of Physicians of Edinburgh in 1899, and was later elected to the Fellowship. He was a man of wide interests, being specially conversant with diseases of children and with the mental development of the child, while he maintained his leaning towards Natural Sciences and was an examiner for the Royal College of Physicians in biology. He was elected medical superintendent at Baldovan Institution in Dundee, where he was able to pursue his investigations of the Psychology of Child Life and its aberrant manifestations. Dr. Drummond was a man of gentle and amiable disposition, with a fund of quiet humour, and although for a few years he had been out of touch with his former colleagues, on account of his indifferent health, he was always remembered by them for his attractive personality. He joined the British Medical Association in 1896.

We regret to record the death at Newton Abbot on November 13 of Mr. JOSEPH JOPLING BROWN, at the age of 51. A native of Darlington, he received his early education at Bootham, York, and Dalton Park, Manchester, and was for two years a schoolmaster before beginning medical study at Newcastle-on-Tyne. He graduated M.B., B.S. of the University of Durham in 1911, and obtained the M.S. degree and the F.R.C.S.Ed. in 1914. He had been a house-surgeon to the Greenbank Hospital, Darlington, and the Royal United Hospital, Bath, before serving as a temporary surgeon in the Royal Navy during the war. On returning to civil life he practised at Barnsley, and in 1921–2 was honorary secretary of the Barnsley Division of the British Medical Association. Fifteen years ago he moved to Newton Abbot, and became district medical officer and public vaccinator, and was appointed honorary surgeon to the Newton Abbot Hospital. He leaves a widow, one son, and two daughters.

We regret to announce that Colonel WILLIAM KITSON CLAYTON, C.M.G., R.A.M.C., T.A. (ret.), died at Wakefield on November 12, aged 77. He was educated at Yorkshire College, Edinburgh, and Brussels, and took the L.R.C.P. and S.Ed. in 1884, and subsequently the M.D. at Brussels in 1892. He served for many years in the R.A.M.C., T.A., in which he rose to the rank of colonel. During the war of 1914–18 he served in France and Flanders, where he was commanding officer of No. 57 West Lancashire Casualty Clearing Station, and later A.D.M.S. of the 61st Division. He was mentioned in dispatches in the *London Gazette* of January 1, 1916, January 4, 1917, and December 30, 1918, and received the C.M.G. as well as the medals. He was also a Commander of the Order of St. John of Jerusalem. In civil life he was one of the best-known medical men in Wakefield. He had been a member of the British Medical Association since 1889.

We have to announce with regret the sudden death of Dr. DAVID ANDERSON FARQUHARSON on November 16 at the age of 64. The third son of Dr. Farquharson of Dollar, he was educated at Dollar Academy and George Watson's, Edinburgh. He graduated at Edinburgh University as M.B., C.M. in 1894, and obtained the F.R.F.P.S. Glasg. in 1904 and the D.P.H. Calcutta in 1921. Soon after qualifying Dr. Farquharson became one of the most successful coaches in physiology for the University and the Royal College of Surgeons of Edinburgh, and later became professor of physiology at St. Mungo's College, Glasgow. During the war he served as captain, R.A.M.C., at Gallipoli and in India. He was then appointed senior medical officer to the Darjeeling District Medical Association, and was medical officer of health for that district. He retired three years ago to take up his residence at Magdala Road, Nottingham. He was joint author of Clarkson and Farquharson's *Textbook of Physiology*. An accomplished pianist, a great reader and student, a man of generous good-heartedness, he has left many friends, who with his old students and colleagues sincerely regret his sudden death.

Dr. ALEXANDER HILL GRIFFITH died in a nursing home at Woking on November 25. Dr. Hill Griffith was 77, and for some time past had been in poor health. He was born in Aberdeen, the seventh son of Charles Fox Griffith, J.P., and was educated at the Grammar School and University of Aberdeen, where he graduated M.B., C.M. in 1880, going on to the M.D. in 1883. He then began at the Manchester Royal Eye Hospital, as house-surgeon

to Dr. David Little, an association which was to be continued for a long period. After seven years in residence there he took the F.R.C.S.Ed. in 1896, and started private practice in Manchester as an ophthalmologist. He became, in succession to Dr. Little, surgeon and later consultant surgeon to the Royal Eye Hospital, and he was a lecturer in ophthalmology and ophthalmic surgeon to the Manchester Royal Infirmary. He did a great deal of pioneer work on the subject of refraction and on the field of vision. A member of the Ophthalmological Society and of the Manchester Medical Society, he had also been a member of the British Medical Association for forty-three years, being appointed secretary of the Section of Ophthalmology at the Annual Meeting in Manchester in 1902 and vice-president of the same Section at Belfast in 1909. He contributed several papers to the specialist journals and a chapter on diseases of the choroid and vitreous to Oliver and Norris's *System of Diseases of the Eye*. Dr. Hill Griffith had a large measure of success in his professional work, and always enjoyed the confidence of his colleagues and his many patients. He was, too, an inspiring teacher, and his postgraduate classes at the Royal Eye Hospital were always among the best-attended. On retiring from active practice he went to live at Woking soon after the war, and developed there the interests he had always maintained in golf and music. He is survived by his younger brother, Dr. T. Wardrop Griffith of Leeds, and by several nephews and nieces.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The Faculty Board of Medicine has appointed Dr. G. S. Graham-Smith, Dr. G. H. Orton, Dr. Ff. Roberts, Dr. F. G. Spear, Mr. R. Williamson, Dr. E. P. Cumberbatch, Dr. P. J. Kerley, Dr. W. P. Philip, Dr. R. J. Reynolds, and Professor S. Russ to be members of the Committee for Medical Radiology and Electrology for the year 1938.

Sir Patrick Laidlaw, B.Chir., F.R.C.P., F.R.S., has been appointed Rede Lecturer for 1938.

At a congregation held on November 27 the following medical degrees were conferred:

M.D.—S. K. Sen, J. L. Lovibond, L. P. Marshall.
M.B., B.CHIR.—D. H. Davies, *W. H. R. Jeremy, J. R. Owen, C. H. T. Bond, L. R. King, G. G. Ludgater, D. D. Keall.
M.B.—*J. F. L. Walley, *E. J. Neill, *T. C. Stamp, F. C. Maddox, A. H. Lankester.

* By proxy.

UNIVERSITY OF LONDON

The following candidates have been approved at the examination indicated:

POSTGRADUATE DIPLOMA IN PSYCHOLOGICAL MEDICINE.—*With Special Knowledge of Mental Diseases:* D. A. S. Blair. *Part A:* Hilda M. S. Davidson, S. H. Lubner.

QUEEN'S UNIVERSITY, BELFAST

The Senate at its meeting on November 24 conferred the title of Professor Emeritus upon Professor R. J. Johnstone, President of the British Medical Association, who has held the chair of gynaecology from 1920 to 1937.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

SURGERY.—J. D. Anderson, W. J. Bold, G. G. O. Evans, D. H. Fowler, H. D. Lamb, G. L. Young.
MEDICINE.—J. D. Buckner, H. D. Lamb, G. Macbain, F. W. McKenna, S. J. Nathan, R. A. Stenhouse, J. A. Taylor.
FORENSIC MEDICINE.—J. D. Buckner, H. D. Lamb, G. Macbain, F. W. McKenna, S. J. Nathan, R. A. Stenhouse, J. A. Taylor.
MIDWIFERY.—B. Berman, E. E. Buckler, H. S. A. Corfield, T. Gadian, B. A. Hoogewerf.

The diploma of the Society has been granted to J. D. Anderson, J. D. Buckner, T. Gadian, B. A. Hoogewerf, H. D. Lamb, G. Macbain, F. W. McKenna, and R. A. Stenhouse.

Medico-Legal

A PEST OF PRACTICE

One of the trials which sometimes beset the general practitioner is the fanatical patient who takes a dislike to him and follows him round, insulting him and damaging his property or spreading scandalous reports about him. It is always difficult to know what to do with these people—to do anything with them is bound to mean unpleasant publicity. A typical instance came before Mr. Justice Macnaghten at the Lincolnshire Assizes last month.

A Skegness doctor complained that while he was attending an old lady her daughter, "in a somewhat intoxicated state," threw a quantity of cold water over him and drenched him, threw empty beer bottles at him, and smashed all the glass in his car windows. After he had telephoned to the police she threw a number of large stones at him. A few days later she wrote him a letter, in the course of which she said, "Darling, you must keep your promise and marry me," and shortly after that an announcement of an engagement between the doctor and the girl appeared in the local paper. She also sent him postcards through the post, one of which bore the word "seducer." He thereupon charged her with assault, damage to property, and criminal libel. He denied in court that he had ever taken the girl in his car, gone for walks with her, or had any kind of relationship with her. The girl, in giving evidence, said that the doctor had attended her as a patient and had said he would like to marry her. He had afterwards seduced her and had had sexual relations with her on several other occasions. Two days before the assault he said he had had enough and was not going to marry her, and that if there was any nonsense he would have her mother certified. She admitted having had some drink on the day of the assault, and pleaded guilty to the assault and the damage. She said she had sent the postcards to the doctor because she had thought they were true. In cross-examination she admitted that she had done the same thing before, in 1928: she and her mother had broken up the other doctor's car and she had accused the doctor of seducing her and had assaulted him. The medical officer of Lincoln prison said that the girl suffered from hysteria, a condition which often gave rise to accusations of this kind. The learned judge said in summing up that there was no evidence for her terrible accusations and that the prison doctor's evidence explained how she had come to make them. In her own interest, and in the public interest, she must go to prison for nine months.

In this case, therefore, the doctor was able to deal effectively with a very serious nuisance and danger. A prosecution for criminal libel, however, always has the disadvantage that it must be tried at assizes. This may mean a delay of several weeks and a certain amount of expense and loss of time. Doctors owe to a certain solicitor of large experience in medical protection a simpler means of countering the "poison pen." Conduct of a character calculated to produce a breach of the peace is an offence which by the Summary Jurisdiction Act, 1879, s. 25, can be tried by a bench of magistrates at once. They can either bind over the offender or send him to prison, and the doctor's name need not be mentioned. This procedure has been found useful on more than one occasion, and has the added advantage that if the writer is mentally disordered he may be remanded and certified. From the reports of this case in the daily press* the accused was apparently suffering from some form of mental disorder. This, however, does not necessarily mean that the learned judge was wrong in sending her to prison. She had been medically examined, and his lordship doubtless had the benefit of thoroughly competent advice as to her treatment. It is probable that if she had been certifiable she would have been certified, and a stiff prison sentence with enforced abstinence from drink may prove beneficial.

* *Times*, November 9 and 10. *Daily Telegraph*, November 10.

Medical Notes in Parliament

In the House of Lords on November 30 the National Health Insurance (Juvenile Contributors and Young Persons) Bill, which has passed the House of Commons, was read the second time.

The business of the House of Commons this week included the Committee stage of the Air Raid Precautions Bill, the second reading of the Unemployment Insurance Bill, and the second reading of the Local Authorities (Hours of Employment in Connexion with Hospitals and Institutions) Bill. Opposition was expected against the last on the ground that an inquiry into the conditions of the nursing profession is in progress.

In the House of Commons on November 30 Mr. CHAPMAN introduced the Prevention and Treatment of Blindness (Scotland) Bill, which enables local authorities in Scotland to make arrangements for the prevention and treatment of blindness. He said that there were 8,738 blind persons of all ages in Scotland. The Bill would give local authorities the powers possessed by similar bodies in England and Wales. These powers would be permissive.

Clauses in the Unemployment Insurance Bill, which Mr. Ernest Brown has introduced, enable education authorities for higher education in England and Wales and education authorities in Scotland to provide for unemployed juveniles attending junior instruction centres and classes: (*a*) meals in the same circumstances and under the same conditions as meals may be provided by authorities for elementary education in England and Wales for children attending public elementary schools and by education authorities in Scotland for children under obligation to attend and attending school; (*b*) during the hours when instruction is being given, milk and biscuits free of charge. The Bill further gives powers in respect of medical treatment of such juveniles to education authorities in Scotland. The authorities in England and Wales already have corresponding powers. Education authorities desiring to use the powers to be conferred by this Bill must submit proposals to the Minister, who may approve them if they are in accordance with a scheme which he will draw up with the consent of the Treasury. An Exchequer grant (normally 75 per cent. of the cost) will be made towards the expenses of the authorities.

The Typhoid Outbreak at Croydon

Answering questions on the Croydon outbreak on November 25, Sir KINGSLEY WOOD said Mr. Harold Murphy and the two assessors to the public inquiry into the cause of the outbreak were holding an informal meeting that day, but the officers of the Croydon Corporation were occupied with urgent executive duties in dealing with the outbreak, and a short time must elapse before the opening of the formal investigation. All possible effective steps had been taken by the Corporation, acting in collaboration with officers of the Ministry of Health, to safeguard the purity of the water supply, and the public need have no further fear of infection from that source. He had no doubt that the public would be given opportunity of tendering relevant evidence at the inquiry.

On November 30 the Minister of Health was asked whether he was aware that the inhabitants of Croydon were not warned immediately upon the outbreak of typhoid and advised to boil their water before use, and if he would make inquiries why this precaution was not carried out. Mr. BERNAYS replied that this would be investigated at the forthcoming inquiry. It would be improper for the Minister of Health to anticipate the results of that inquiry.

Malnutrition

Mr. LEONARD, in the House of Commons on November 24, moved a motion which asked the House to note the "convincing evidence of widespread malnutrition," and called for "effective steps to deal with this grave and urgent problem of hunger and want." He cited what he termed "the unchallenged evidence of Sir John Orr upon infant mortality," and said he doubted the sole right of the doctor to make judgements on these matters. In the Hebburn district, a distressed area, a new medical officer came in 1935 from a non-distressed area. He classified as subnormal and bad more than double the number that had been so classified by his predecessor.

Mr. GEORGE GRIFFITHS seconded the motion. He said official figures showed that of children in the schools 26 per 1,000 required more and better food. In Pontypridd the proportion was 210 per 1,000. In his own Division two boys who met with slight accidents when working in the pit were taken to Beckett's Hospital at Barnsley and died. The doctor said those two boys went under not so much on account of the accident as on account of the state of their health.

Mr. HAMILTON KERR moved an amendment, which asked the House to express satisfaction with the action taken and proposed to be taken to improve nutrition. Sir ARNOLD WILSON seconded this amendment.

Mr. RIDLEY stated that the Derbyshire County Council did not provide one free solid meal for one child in the whole of that county. The Board of Education had not done enough to persuade reluctant local authorities to use the provisions on the Statute Book for this purpose. Lady ASTOR said a report from the Board of Education showed that local authorities had power first to discover the children and then to feed them freely where parents were unable to do it. The Government ought to take powers to compel local authorities to do this. When the Government tried an experiment of giving cheap milk in some distressed areas the children immediately drank four times and the mothers three times as much as before.

Mr. BERNAYS said that the Government was giving unremitting attention to the problem of making good the deficiency in the consumption of milk. Nearly 3,000,000 children were receiving milk under the Board of Education scheme. Under maternity and child welfare services ninety-eight authorities had increased the period during which milk was supplied, sixty-two had increased the quantity, and forty-two had adopted a more liberal scale. Of two diseases associated with malnutrition—tuberculosis and rickets—mortality from tuberculosis now numbered only half what it was twenty-five years ago and mortality from rickets was half what it was five years ago.

Mr. JOHNSTONE said a lecture given to the Royal Statistical Society on November 16 by Mr. R. H. Jones, statistician to the University of Liverpool, revealed the different results of different doctors examining children, and the different results of the same doctor examining the same children at intervals of a week or two. Out of 100 children examined in Cheshire one doctor found three subnormal boys. In the same 100 children another doctor found ninety subnormal boys.

On a division Mr. Leonard's motion was rejected by 202 votes to 140, and the alternative words proposed by Mr. Kerr were not put to the House. Discussion followed on another motion, moved by Mr. TINKER, which declared that present inequalities in the distribution of wealth could not guarantee the necessary standard of life to numbers of the population. This motion was also rejected.

Evacuation of Overcrowded Areas in Air Attack

When the Air Raid Precautions Bill was considered by the House of Commons in Committee on November 25, Dr. HADEN GUEST moved to add that local authorities be made responsible for the evacuation of persons residing in overcrowded areas or in areas particularly liable to attack. He said that in the opinion of the greatest bacteriologists there was no likelihood of bacterial warfare being undertaken. Destruction of the water supply or of the sewerage of a city would suffice to bring on typhoid, dysentery, and so on. A panic evacuation would induce sanitary catastrophes or epidemics. The evacuated population would have to be spread thinly over the relatively safe areas, with proper regard to water supplies and sanitation.

Sir SAMUEL HOARE said the Committee of Imperial Defence was engaged on problems of evacuation.

The amendment was negatived by 226 to 125.

Mr. GEOFFREY LLOYD stated, on November 25, that the recommendations of the Air Raid Precautions Department on the protection of a room against gas were based on experiments carried out over a period of years. Research on this subject continued. The building used for most of the tests was a brick-built cottage in a reasonable state of repair. Mr. Lloyd also stated that the respirator which would be provided for the civil population would be manufactured in three sizes. The details of the arrangements for fitting members of the public would be made by the local authorities. The respirators should be fitted in time of peace.

Problem of Population

On November 29 Sir KINGSLEY WOOD moved the second reading of the Population (Statistics) Bill. He said that much more information was required on the whole subject of the decline in the birth rate before policy could be considered. Inquiries as to fertility in this country were not new, and there was no ground for the suggestion that the answers given would not be treated with complete secrecy. No questions about birth control would be put down. Apart from considerations of more public importance, it was a hasty and superficial view to put a question about birth control. The answers would take them no further. Contraceptive methods might be one of the means, but was not the cause of the decline in the birth rate, which they desired to ascertain.

There was a question about the issue of an unmarried woman. Approximately 30,000 illegitimate births took place in Great Britain annually. It was only in the case of an unmarried woman that the question of illegitimacy was raised, and he would have regard in committee to the general opinion of the House on that matter. When the inquiry was in progress they would have regular annual figures showing area by area and for the country as a whole the number of children born to parents of particular ages and occupations, with varying duration of the marriage. The figures would be tabulated by areas, and would show any local or occupational variations in fertility. They would furnish valuable and essential information on which a further inquiry into the real operative causes could be thoroughly examined.

Mr. PETHICK-LAWRENCE moved an amendment to the effect that the House, while recognizing that the collection of some additional facts regarding the population might be desirable, could not assent to the second reading of a Bill which instructed the registrars to elicit confidential and intimate information not urgently needed for statistical purposes.

During the debate Sir FRANCIS FREMANTLE said that what was needed was to discover the real reason why people limited their families. We did not know if there was some vital factor in modern civilization, some involuntary, unconscious factor, that was undermining the fertility of people generally in either sex.

The motion for the rejection was negatived by 197 votes to 125, and the Bill was read a second time.

General Practitioners and Public Health Service

Commander FLETCHER asked, on November 25, if the Minister of Health was aware of the lack of collaboration between doctors in private practice and the public health services, and its possible bearing on recent epidemics at Bournemouth and Croydon; and if he would set up a committee to investigate this subject. Sir KINGSLEY WOOD answered that in so far as the question related to events connected with the outbreak of typhoid at Croydon, he could not anticipate the results of the inquiry. Every opportunity was taken by his Department to emphasize the need for collaboration between the various branches of the medical profession. He was glad to say that there was increasing recognition of this need on the part of local authorities.

Watercress and Typhoid

On November 29 Mr. DONNER asked the Minister of Health whether he was aware of the serious plight of growers of watercress in North-West Hampshire and elsewhere from the refusal of retailers to buy in consequence of public fear of typhoid infection, and whether he could give an assurance that there was no evidence to show that watercress was responsible for the present outbreak and that the public incurred no danger by eating watercress, particularly when grown, as in Hampshire, a great distance from any known centre of infection. Mr. BERNAYS replied that the attention of the Minister had been drawn to Press statements on this matter. While he could not properly express an opinion on the cause of the present outbreak, pending the result of the forthcoming public inquiry, the Minister had no evidence to suggest that it was in any way connected with the eating of watercress.

Anti-typhoid Inoculation

Mr. WILFRID ROBERTS asked, on November 25, whether, in view of the successful suppression of an outbreak of typhoid at the Basque children's camp at Eastleigh in the summer by inoculation, it was proposed to recommend inoculation as a preventive measure in the Croydon area. Sir KINGSLEY WOOD replied that the circumstances of the two outbreaks were different, and general anti-typhoid inoculation in Croydon would not be beneficial. The protection by inoculation or otherwise of individuals resident in houses in which cases of typhoid were being nursed was a matter for consideration by the medical practitioner in attendance in the light of the special circumstances of each case.

Northumberland County Council and Anatomy Acts.—Mr. BERNAYS, replying to Mr. Thorne on November 23, said that a request was made to the Northumberland County Council by the Inspector of Anatomy, with the Minister of Health's authority, that in the interests of medical education they should, in exercise of their powers under the Anatomy Acts, 1832 and 1871, permit the anatomical examination in the School of Medicine of the University of Durham at Newcastle-upon-Tyne of the bodies prior to interment of any persons under their charge who died without being claimed by relatives for immediate burial. Arrangements of this kind were in operation in many areas, but the matter lay within the discretion of the local authority. The Northumberland County Council had, after consideration, decided not to exercise their powers in the manner suggested.

Harefield Sanatorium.—On November 23 Mr. HORE-BELISHA, replying to Mr. Messer, said that the Harefield Sanatorium was visited by a medical staff officer of the Eastern Command on December 9, 1936. Prior appointment for the visit was made with the superintendent of the sanatorium. The purpose of the visit was to ascertain whether it was any use approaching the Middlesex County Council to earmark the sanatorium as one of the twenty-nine Territorial Army General Hospitals required on mobilization. The sanatorium was again visited at the beginning of last May by the Deputy Director of Medical Services, Eastern Command, after making prior appointment in writing with the superintendent, to verify its suitability for the purpose in question.

Deaf and Dumb and State Benefits.—Mr. BERNAYS, replying to Mr. Pilkington on November 23, said that the number of deaf and dumb persons in the United Kingdom had been estimated at about 40,000, but no accurate figures were available. The question of putting them on the same footing as the blind in regard to State benefits had been considered, but for the reasons contained in the exhaustive report of the late Dr. Eichholz, published in 1932, the Minister of Health was not satisfied of the necessity for the legislation which would be required to give effect to this.

Imported Butter: Detection of Tuberculous Infection.—Mr. LAMBERT asked on November 25 whether imported butter made from the milk of tuberculous or diseased cows abroad could be detected by analysis at the ports of entry into Great

Britain. Sir KINGSLEY WOOD replied that it could if the milk had not been pasteurized and, in the case of tuberculosis, if the cows actually yielded milk containing tubercle bacilli. Practically all milk and cream used for making imported butter was pasteurized.

School Dental Service.—The present staff of the school dental service in England and Wales is equivalent to about 735 full-time dentists. On the assumption that the ratio of the number of children receiving dental treatment to the number recommended for such treatment remained as at present, a staff equivalent to about 1,100 full-time dentists would be required to provide for all children attending public elementary schools a service of the type now available. Mr. KENNETH LINDSAY, in giving this information, added that the percentage of parents who accepted dental treatment for their children was regrettably low, and efforts were being made to increase it. If appreciation of the facilities provided, and particularly of the opportunities for conservative dental treatment, were universal, an efficient service for all public elementary school children would necessitate the employment of slightly more than 2,000 full-time dentists, or their equivalent in terms of part-time service.

Notes in Brief

About three million respirators have been placed in the regional depot in Liverpool.

The number of notified cases of acute poliomyelitis and acute polio-encephalitis in England and Wales during the current year up to October 30 is approximately 705, as compared with an annual average of 698 for the last five years.

A second anti-gas school will open at Easingwold, near York, on December 27. The school at Falfield, Gloucestershire, accommodates sixty students, and on completion the Easingwold school will accommodate a similar number.

Sir Samuel Hoare will consider a suggestion that he should draw the attention of the General Medical Council and similar bodies to the need for increased vigilance in the custody of poisons and drugs by medical practitioners and chemists. Sir Samuel hopes, however, that the publicity given by broadcast warnings and otherwise will suffice to ensure the utmost care.

A further experimental scheme for the supply of milk at cheap rates to expectant and nursing mothers and children under 5 years of age came into operation on October 1, at Whitehaven.

Measures recommended to safeguard the inmates of mental hospitals against the effects of poison gas following an air raid will be those recommended for the civilian population as a whole, with such special arrangements as the condition of the patients may require. Specially trained medical instructors will be available for lectures and practical demonstrations to the medical and nursing staffs.

The estimated cost of providing free milk to all children under school age and to expectant mothers daily in England and Wales is about £18,000,000 per annum.

The Services

ARMY MEDICAL SERVICES

The War Office announces that Colonel W. B. Purdon, D.S.O., O.B.E., M.C., late R.A.M.C., Professor of Hygiene, Royal Army Medical College, has been selected for promotion to the rank of Major-General, and for the appointment of Commandant and Director of Studies, Royal Army Medical College, from March 1, 1938, in succession to Major-General W. P. MacArthur, D.S.O., O.B.E., late R.A.M.C., who assumes the appointment of Director-General, Army Medical Services, on that date. Colonel Purdon will be succeeded as Professor of Hygiene, Royal Army Medical College, by Lieut.-Colonel D. T. Richardson, M.C., R.A.M.C., who at present holds the appointment of Assistant Director of Hygiene, the War Office.

DEATHS IN THE SERVICES

Deputy Inspector-General CHARLES WILLIAM SHARPLES, R.N. (ret.), died at Bognor on October 28. He was educated at the Middlesex Hospital, and took the L.S.A. in 1878 and the L.R.C.S.Ed. in 1881, after which he entered the Navy. He attained the rank of Fleet Surgeon on August 25, 1897, and retired as Deputy Inspector-General on February 27, 1909.

Lieut.-Colonel JAMES HENRY CURTIS, R.A.M.C. (ret.) died on September 27, aged 77. He was born at Cork on April 30, 1860, educated at Queen's College, Cork, and qualified L.R.C.P. and S.Ed. in 1883. He entered the Army as surgeon on May 30, 1885, became lieutenant-colonel after twenty years' service, and retired on June 4, 1910. He served in the South African war of 1899–1902, and took part in the relief of Ladysmith, and was present at the actions of Colenso, Spion Kop, Vaal Krautz, Tugela Heights, and Picker's Hill. Afterwards he served in operations in the Orange Free State, the Transvaal, Natal, and Cape Colony. He received the Queen's Medal, with a clasp, and the King's Medal, with two clasps. He rejoined on August 5, 1914, for service in the war of 1914–18.

Medical News

A sessional meeting of the Royal Sanitary Institute will be held at 90, Buckingham Palace Road, S.W., on Thursday, December 9, at 4.30 p.m., when there will be a discussion on "Public Health and the Factories Act, 1937," to be opened by Dr. A. Massey and Mr. Maurice Malins. The chair will be taken by Sir Francis Fremantle, M.P., M.D. The Institute will also hold a sessional meeting at Oxford Town Hall on Friday, December 10, at 5 p.m., when papers will be read by Dr. F. G. Hobson on "What is Scarlet Fever?" and by Mr. Stewart Swift on "Overcrowding Standards: A Comparative Study." On December 11 visits will be made to the Nuffield Institute for Clinical Research and the Oxford Corporation Waterworks.

Sir Joseph Barcroft, F.R.S., will give an address on "Foetal Respiration" before the Listerian Society of King's College Hospital Medical School at the school, Denmark Hill, S.E., on Wednesday, December 8.

A meeting of the Paddington Medical Society will be held at Paddington Tuberculosis Dispensary, Talbot Road, W., on Tuesday, December 14, at 9 p.m, when Dr. H. L. Marriott will give an address on "The Treatment of Cases of Acute Poisoning." Non-members are invited to attend and to take part in the discussion.

A winter sports tour designed to interest medical students has been arranged for this Christmas by the National Union of Students in co-operation with the medical office of the International Confederation of Students and the director of the Swiss University Sanatorium. It will provide opportunity to combine study of the leading Swiss sanatoria as the guests of the sanatorium authorities with a week at a winter sports centre in the Matterhorn district. The party will leave England on December 27 and return on January 8. Particulars may be had from the National Union of Students, 3, Endsleigh Street, London, W.C.1.

On November 25 Lord Sankey accepted, on behalf of University College, London, a portrait bust in bronze of the late Henry Tonks, F.R.C.S., who was Slade Professor of Fine Art in the University of London from 1917 to 1930. The bust is the work of Horace Gerrard, a former pupil and colleague of Tonks. Wood engravings of Bath and its neighbourhood by Mr. Gerrard adorned the *Book of Bath*, which was presented to all members of the British Medical Association taking part in the Annual Meeting there in 1925. An inscribed tablet on Professor Tonks's house in the Vale, Chelsea, and the founding of an annual prize for drawing in the Slade School complete the memorial.

Up to the time of going to press the number of known or suspected cases of typhoid fever at Croydon was 248, with 10 deaths.

The annual dinner of the Old Epsomian Club will be held at the Café Royal, Regent Street, London, on Thursday, December 9, at 7 for 7.30 p.m.

At the Swedish Church, Harcourt Street, London, W., on November 24, Dr. A. Kellgren-Cyriax, physician in charge of the mechano-therapeutic department of the Elizabeth Garrett Anderson Hospital, unveiled a bronze plaque to commemorate the hundredth anniversary of the birth of her father, Henrik Kellgren, a pioneer in medical gymnastics, who came to London from Sweden in 1875.

The object of the Children's Minimum Council, whose president is Sir Frederick Gowland Hopkins, is to "ensure that no child shall, by reason of the poverty of its parents, be deprived of at least a minimum of food and other requirements necessary for full health." Steps taken by the council to extend its activities outside London include a conference on child nutrition, to be held at University College, Cardiff, to-day, Saturday, December 4. This is the first of a series of similar conferences in various localities, with the object of arousing public interest and uniting all local organizations and individuals concerned with maternity and child welfare. Resolutions calling upon the Government to put nutrition in the forefront of the physical fitness campaign, and putting forward specific proposals for implementing this by means of increased unemployment allowances, free milk for all school children and free dinners for necessitous ones, cheap milk for mothers and young children, and asking that the major cost of such measures should be borne by the national Exchequer, will be moved.

The Board of Registration of Medical Auxiliaries, the body responsible for the *National Register of Medical Auxiliary Services*, proposes to issue a distinctive badge to be worn by registered medical auxiliaries, and it has been decided to institute a competition and to offer a prize of five guineas to the person who submits the best design for such a badge. The competition is open to any person. Entry to the competition is free, and persons desiring to compete should apply, in the first instance, to the Registrar, Board of Registration of Medical Auxiliaries, British Medical Association House, Tavistock Square, W.C.1, when details of the competition will be sent.

The October issue of the *Annals of Surgery* is devoted to the transactions of the American Surgical Association for 1937, followed by a memoir of Sir Alfred Keogh by Major-General Sir Michael Russell.

The issue of the *Archives de Médecine des Enfants* for November is devoted to diphtheria.

The new building of London House, in Bloomsbury, a hall of residence for British men students from all parts of the Empire, is being opened to-day (Friday, December 3) by Queen Mary. The new buildings, designed by Sir Herbert Baker, R.A., occupy a third of a freehold island site of about 1½ acres fronting Mecklenburgh Square, Caroline Place, Guilford Street, and Doughty Street. When rebuilding is completed on the site there will be accommodation for 250 men.

Sir James Crichton-Browne, M.D., F.R.S., celebrated his ninety-seventh birthday on November 29.

The Academic Senate of the University of Leyden on October 29 celebrated the 300th anniversary of the introduction of clinical instruction.

Dr. Ferdinand Sauerbruch, professor of surgery at Berlin, has been elected a member of the physical and mathematical section of the Prussian Academy of Sciences.

According to recent statistics there were 14,000 more deaths than births in Vienna in 1936, and throughout the Austrian Republic there was a deficit of four births per 1,000 deaths.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS should be addressed to the Advertisement Manager. Orders for copies of the *Journal* and communications with reference to subscriptions should be addressed to the Secretary, B.M.A. House, Tavistock Square, W.C.1.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111.

The TELEGRAPHIC ADDRESSES are
EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*
SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone: 24361 Edinburgh), and of the Office of the Irish Free State Medical Union (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin;* telephone 62550 Dublin).

QUERIES AND ANSWERS

Rapid Method of Examining Urethral Discharge for Gonococci

Dr. B. R. SANDIFORD (Cairo) writes: With reference to Dr. F. G. Morgan's query on this subject (*Journal*, November 6, p. 947), may I bring to his notice an improved method of staining which I recently published in the *Journal of Pathology and Bacteriology*, 1937, **45**, 467? The film is treated as in Gram's method up to the end-point of decolorization. Then, instead of a red counter-stain, Unna-Pappenheim stain is left on for two minutes and then quickly washed off. Gram-positive and Gram-negative organisms will be stained purple and pink respectively; the cell-nuclei, however, will be bluish instead of pink. The Gram-negative organisms are thus more easily detected than when the nuclei are also pink. The Unna-Pappenheim stain is made up of: methyl green, 0.15 gramme; pyronin, 0.5 gramme; alcohol (95 per cent.), 5 c.cm.; glycerol, 20 c.cm.; and carbolic acid in water (2 per cent.) up to 100 c.cm. It seems to keep quite well.

Persistent Uterine Discharge

M.R.C.S.ENG. would be grateful for suggestions as to whether hormone therapy would be useful in the following case. Nullipara, aged 35 years, fifteen years intermittent uterine discharge, watery in character and brownish in colour, lasting for seven to ten days before menstruation, which is of regular twenty-eight-days type, loss moderately severe for seven to eight days. During attacks she is irritable and depressed and has intense pruritus. Physical examination negative. She is under-sexed and of allergic type, being sensitive to certain foods and foreign proteins. Curettage has relieved the spasmodic dysmenorrhoea from which she suffered in her early sexual life, but has had no effect on the discharge, which is sometimes absent for a few months, but invariably returns. There is no leucorrhoea. General health good.

Camphorated Oil for Intravenous Injections

Dr. VICTOR DE RUETTE (Wépion-lez-Namur, Belgium) writes: I would like to use camphorated oil intravenously in cases of pulmonary tuberculosis with cardiac failure. Such a method is referred to in French medical papers as being used in general practice. I should be grateful to hear from my colleagues who might happen to have experience in the matter if they consider this practice to be without danger in such special cases; also to have their suggestions as to the quantity to be injected at a time, the interval between the injections, and the rate of injection.

Income Tax

Liability to Surtax

"SUPER" has been charged to surtax on the basis that the amount of income liable is calculated by adding the earnings

shown in his 1936–7 return to the dividends, etc., of himself and his wife shown in the 1937–8 return. Is that correct?

*** Yes. The basis on which surtax is chargeable is laid down in Section 38 of the Finance Act, 1927, and in effect is the income of the actual year of assessment. The assessment referred to by "Super" is for the financial year 1936–7, and as the ordinary income tax is assessed on the basis of the previous year's earnings the amount he entered in his income tax declaration for 1937–8 would be the statutory income of the year 1936–7. The personal allowance, whether for a single or a married man, applies only to "standard-rate" tax and not to surtax.

LETTERS, NOTES, ETC.

Need for an X-Ray Museum

Dr. J. H. DOUGLAS WEBSTER (London, W.1) writes: Though radiology in Britain has not been developed to the same extent as in Germany and the United States—for a number of reasons which it is unnecessary to detail here—it is very far from being in a state of inertia, as Mr. A. P. Bertwistle says (*Journal*, November 20, p. 1054). The British Institute of Radiology is in an active and flourishing condition, as its annual congress in December will demonstrate; the new Section of Radiology of the Royal Society of Medicine has one of the highest average attendances of any of the twenty-three sections at its meetings; the new British Association of Radiologists is an active organization which is proceeding to hold examinations for a higher qualification in radiology than is represented by the diploma; and the new Society of Radiotherapists holds frequent and well-attended meetings at which the many aspects of *x*-ray and radium therapy are discussed. In every direction there are indeed such evidences of active and progressive vitality that his strictures seem singularly ill timed. There is something, however, to be said for his suggestion of a central *x*-ray museum. Most large hospitals have their own local museum collections in radiology as in other subjects. A large central museum would correspond to the surgical museum of the Royal College of Surgeons, but years would be needed for such a collection to be formed. Special endowment of some existing body such as the British Institute of Radiology or the British Association of Radiologists would attain in time such an end, which needs space, money, and an active, enthusiastic, and gifted curator—conditions not easily fulfilled. It would be a great help in teaching the subject to have under one roof a museum representative of radiology in all its aspects: historical, technical, and normal varieties, with typical illustrations, clinical, pathological, and radiological, of the various diagnostic and therapeutic uses of radiology. Not only an *x*-ray museum but an *x*-ray and radium museum should be aimed at for the subject to be illustrated in all its bearings on medicine and industry.

Strangulation of a Herniated Ovary

Dr. C. EDWARDS (Bournemouth) writes: The note by Dr. M. H. Fridjohn and Mr. Maurice Lee (*Journal*, August 7, p. 265) on a strangulated ovary in a hernia occurring in a child aged 3 months prompts me to record the case of another female child of the same age who was admitted by Dr. R. S. Weir (my partner, and now of Dunfermline) to the Andover Hospital on August 18, 1924. At his request I operated on her and found a right strangulated ovarian hernia. She was discharged on August 20, 1924, since she was being breast-fed. Beyond the fact of age, there appears to be nothing unusual in these cases except the scarcity of recorded instances in the literature. The late Dr. A. E. Farr of Andover told me at the time of another case, of about the same age, which was operated on by an assistant of his in the belief that it was a suppurating gland in the groin.

Spontaneous Cures of Cancer?

Professor A. GALBRAITH FAULDS (Glasgow) writes: In the issue of the *Journal* for November 20 we have been entertained to all the gruesome horrors of cancer with its relentless toll of victims, the certainty of gastric troubles leading to malignancy, and of uterine, mammary, hepatic, and corpora striatal disease turning out to be cancerous. May I ask if there is no hope that these awful conditions have on the obverse strange courses, which not only defy the ken of man but demonstrate the hidden methods of Nature in favour of the patients? Are there no surgeons like myself who have advised certain kinds of patients, at or over 70, to leave a malignant breast with enlarged glands, refusing to operate, and who have seen the whole thing dry up and disappear? Are there no pathologists who can come forward and claim to have found at necropsy such evidence of obsolete cancer and obsolete tubercle as I have seen myself? No physicians who have seen malignant osteosarcomas, which started at the body of the sphenoid, grew forwards pushing one eye out, and had to be extirpated, disappear like magic, or chronic dyspepsias of over twenty or thirty years' standing clear up under such simple treatment as fresh taraxacum without becoming malignant? All experienced physicians will corroborate this. There are endless lists of such cases that can be quoted to prove that Nature can achieve even in malignancy remedies that stagger and humiliate the efforts of our great profession.

Heavy Twins

Dr. G. GRIMSON (Finchley) writes: A patient of mine recently gave birth to live full-term twins, each weighing 9¼ lb. I would be interested to know if their weights are a record. It was her third pregnancy, and the labour lasted seven hours, the interval between the births being twenty minutes. The first twin was a breech presentation and the second a vertex.

Medical Register: Office Edition

The Registrar of the General Medical Council informs us that orders for the office edition of the *Medical Register*, 1938, published by the Council at the special price of 10s. a copy, post free, must be received, with a remittance, at the office of the Council not later than December 31, 1937. The office edition differs from the ordinary edition to the extent that it does not contain reprints of the Medical and Dentists Acts and other preliminary matter, and is printed on less expensive paper and bound in boards. It includes, however, the same entries relating to registered medical practitioners as are included in the ordinary edition, and is therefore equally serviceable to public authorities and others who find it necessary to ascertain whether particular persons are registered medical practitioners or not. The Council also prepares monthly lists of names added to, and removed from, the *Register*, and particulars of the terms and conditions upon which copies of these lists may be made available can be obtained on application to the office of the Council, 44, Hallam Street, Portland Place, London, W.1.

Medical Products

Allen and Hanburys Ltd. have published in book form their *Medical and Dietetic Products Price List*, replacing *Medicamenta Recentia*, the small book of notes on preparations which has been issued at irregular intervals in the past. It gives concise descriptions of the specialties marketed by this firm, a list of sera and vaccines prepared at the Lister Institute, and a therapeutic index.

B.D.H. Medical Products is the title of a bound volume comprising the medical price list of British Drug Houses Ltd. Besides a full list of names and prices there are included descriptive notes on highly specialized preparations which make up the series of B.D.H. medical products. Any reader who has not received a copy can have one, free of charge, by writing to the manufacturers, Graham Street, City Road, London, N.1.

Rayner and Co., Ltd. (Edmonton, N.18) have issued a booklet for medical men on the subject of their preparation "Lembar," which consists of natural lemon juice and a solution of extracts of barley with cane sugar and dextrose. In a pocket at the end of the booklet are diet sheets prepared by a hospital dietitian. Copies may be had from the makers.

Corrigendum

In Dr. Hector Maclean's reply to an inquiry on the subject of buccal and lingual ulcers on page 1102 of our issue for November 27 he, through a printer's error, is made to refer to *Staphylococcus viridans*. The sentence in its correct form ends: ". . . each case was swabbed and yielded a growth of *Streptococcus viridans* in pure culture or as the predominant organism."

Disclaimer

Mr. R. STUPPEL (resident surgeon, Mexborough Montagu Hospital) writes: A considerable amount of very undesirable publicity has been given me in the Press recently. I wish to say that it was entirely without my knowledge or consent.